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ABSTRACT

This inservice training guide on nutrition activities for preschcol and elementary school teachers consists of 14 lesson plans for twc workshops and more than 20 related instructional handouts that can be copied for teachers. The first workshop for teachers provides a rationale for nutrition education ine elementary curriculum as well as instruction on integrating nutrition education: evaluation and testing: the rcle of the nutrition education staff: food intake analysis, digestion and nutrients: the Type "A" lunch: and clean and squeaky classrocm cocking. The second workshop, to be given 5 months after the first, covers the follcwing topics: ecology and nutrition: vegetarianism: materials for evaluating student outcomes, and program effectiveness. (Author/RH)

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SNAC
San Mateo Nutrition Activity Curriculum
"Swing Into Nutrition"

SAN MATEO CITY SCHOOL DISTRICT

50 Peninsula Avenue
P.O. Box K
San Mateo, California 94402

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Dr. Julian Crocker, Superintendent
Dr. Lillian Wehmeyer, Assistant Superintendent

Miss Deborah Barley
Nutrition Education Specialist
Project Director

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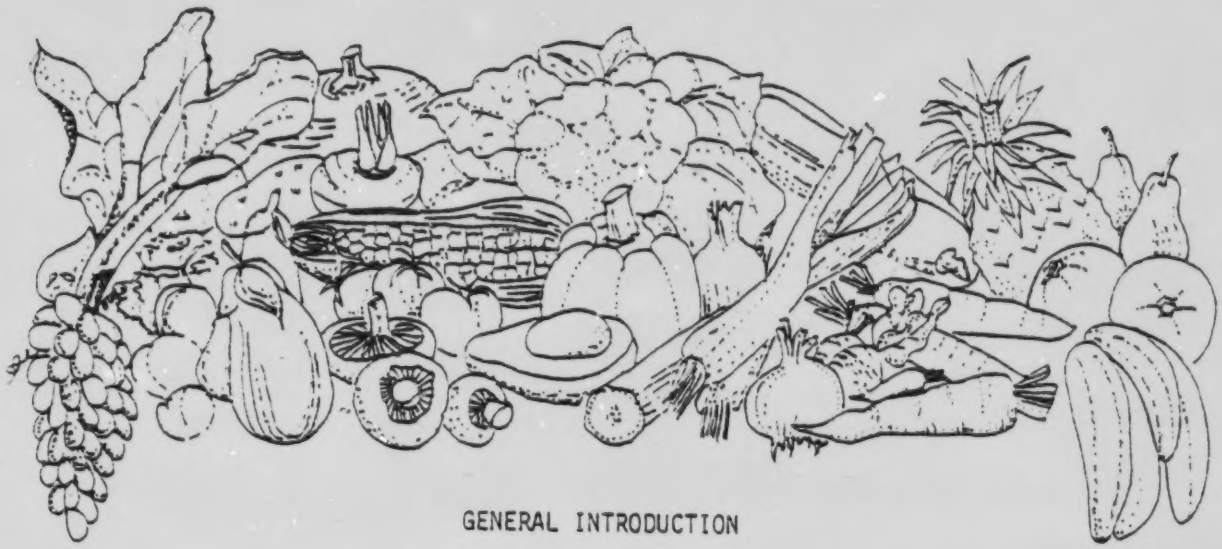


GENERAL INTRODUCTION

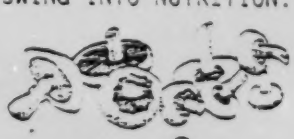
Nutrition Education starts with you! The San Mateo City School District has designed a program in the elementary grades to integrate nutrition education into the general curriculum.

The goal of this program is to prepare elementary school grade students to develop and improve healthful food habits. This Guide is designed to go to any school district before integrating nutrition education into their curriculum to develop the above goal into their school district. In making this Guide useful and practical to anyone, it has been designed for a person to go anywhere and teach teachers the basic nutrition concepts through California State guidelines of nutrition education to children. In using this Guide, it requires two workshops -- one at the beginning and one about five months later. In between these workshops, there should be some contact and reinforcement given to the teachers. There should be a contact or school visit, if needed, in helping with administering the pre-test, plate waste, spot check or whatever needed before the second workshop. After the second workshop, again there should be a contact or school visit, if needed, in helping with plate waste, post-test, or any other occurence. There should be one last visit in administering the post-test to the teachers.

With all of the above in mind, both workshops in consequence have a great deal of information. Accompanying the Staff In-Service Guide, there is a Staff Workbook which has the various materials needed for both workshops. Making this Guide fall into two workshops makes the program more compact. In doing your workshops, use variety in your teaching style, materials and equipment. Keep it going at a fast pace - moving things along at a smooth rate. All of the lessons and activities mentioned in this Staff In-Service Guide have been designed, tested, evaluated and articulated by Project teachers and nutritionists. They have proven effective for all participants.

So, join us and....

"SWING INTO NUTRITION!"



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Nutrition Education Aide	Lenore Hicks
The Board of Education	Donald Hill Sue Lempert Albert Di Matteo Robert Braun Jeanne Schlueter
All Project K-5 Teachers	Laurel School North Shoreview School
Project Principals	Warren Kofler Charles Moorer
Graphic Artists	Brooke Travers William Kirk David Moore

AND

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SAN MATEO CITY SCHOOLS NUTRITION EDUCATION PROJECT

(SNAC)

"SWING INTO NUTRITION!"

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SAN MATEO CITY SCHOOLS NUTRITION EDUCATION PROJECT

STAFF IN-SERVICE GUIDE

LESSON PLAN NUMBER	LESSON PLAN TITLE AND ACTIVITIES (Activities are in Staff Workbook)	LESSON OBJECTIVE	PAGE
	Workshop I - "What's It Consist Of?"		1
	Workshop I - Sample Agenda		2
1	RATIONALE FOR NUTRITION EDUCATION "Food Is More Than Just Something To Eat" - handout "Feeding The World's Hungry: Population Explosion" - slide/tape	To develop an understanding of the terms related to nutrition education.	3
2	INTEGRATING NUTRITION EDUCATION "Use Your 5 Senses" - handout "Food Technologist On The Go" - evaluation form "Test Your Sniffer" - evaluation form "Food Games" - handout "Lesson Plan Evaluation - evaluation form "Lesson Plan and Format - overhead transparency Teacher Responsibilities - handout	To identify sequential activities for classroom nutrition education.	4
3	EVALUATION AND TESTING "Lunch Bunch" - plate waste study "Newsletter" - example	To understand function of student, teacher, and parent testing procedures.	6
4	ROLE OF NUTRITION PROJECT STAFF "Jennie Is A Good Thing" - film "Time-Line" - handout	To identify the relationship between the Nutrition Project staff and participants	7
5	FOOD INTAKE ANALYSIS "Nutrition With Nelson" - filmstrip "Food Groups" - pictures "Nutrition With Nelson" - booklet "Leaders" - handout	To analyze food records to determine nutritional adequacy of a variety of food combinations based on the Four Food Groups System.	9

STAFF IN-SERVICE GUIDE

LESSON PLAN NUMBER	LESSON PLAN TITLE AND ACTIVITIES (Activities are in Staff Workbook)	LESSON OBJECTIVE	PAGE
6	DIGESTION AND NUTRIENTS "Professor Whacko's Incredible Pill" - filmstrip "Nutrition Notes" - booklet "RDA" - handout "Digestion Match" - game "Digestion System - handout	To develop awareness of nutrients relation to physical health; identifies function and source of major nutrients.	12
7	THE TYPE "A" LUNCH "Type "A" Lunch" - poster "The Real Talking, Singing Action Movie About Nutrition" - film "Pizza Palace Type "A" Lunch" - slide show Menus of Typical Type "A" Lunch - handout "Type "A" Lunch Requirements" - handout "Type "A" Menu Contest Forms" - handout	Evaluate lunch menus using Type "A" Lunch criteria.	14
8	CLEAN AND SQUEAKY CLASSROOM COOKING "Meet The Food Spoilers" - handout and poster "Cooking Cart" - instructions "Zucchini Pennies" - recipe "Sanitation Susie" - bag puppet "Food Poisoning" - additional information	To identify sanitation procedures that should be practices when handling food.	15
	Workshop II - "What's It Consist Of?"		17
	Workshop II - Sample Agenda		18
9	ECOLOGY AND NUTRITION EDUCATION "What Is Food?" - filmstrip "Root View Box" - instructions "How Plants Work" Lesson 13, Grade 4 "Energy For Life" Lesson 6 Grade 5	To identify the ways that inhabitants of this planet are interdependent on finite resources that include food.	19

STAFF IN-SERVICE GUIDE

LESSON PLAN NUMBER	LESSON PLAN TITLE AND ACTIVITIES (Activities are in Staff Workbook)	LESSON OBJECTIVE	PAGE
10	VEGETARIANISM - IT'S UP TO YOU Vegetarian In A Nutshell - filmstrip "Proteins: Complete vs Incomplete" - handout and transparency "Summary Of Complementary Protein Relationships" - handout and transparency "What's A Vegetarian?" - transparency	To define the major dietary difference between a vegetarian and a non-vegetarian diet.	21
11	WHAT'S THAT LABEL MEAN "Nutrition Facts To Guide Your Food Choices" - poster "We Want You To Know About Nutrition Labels On Food" - FDA handout "Nutrition Label Terms You Should Know" - FDA handout "Which Is The Better Buy" - transparency and handout	To identify ways the nutrition label benefits the consumer.	23
12	CONSUMER SKILLS "Food Fads: You Bet Your Life" - filmstrip "Choosing A Reliable Resource" - handout "Questions Most Frequently Asked About Sugar" - handout	To evaluate food and nutrition claims on a logical and nutritionally informed basis.	25
13	WHAT ABOUT FOOD ADDITIVES "Primer On Food Additives" - handout "Five Functions Of Food Additives" - handout and transparency	To identify the reason for using food additives in food.	27
14	COOKING THE METRIC WAY "The Metric System" - poster "Metric Measurements" - handout "Snack Metric" - recipe	To identify metric measuring utensils through preparation of a recipe	29

Workshop I consists of the following components:

1. Rationale for Nutrition Education in Elementary Curriculum
2. Integrating Nutrition Education
3. Evaluation and Testing
4. Role of Nutrition Education Staff
5. Food Intake Analysis
6. Digestion and Nutrients
7. The Type "A" Lunch
8. Clean and Squeaky Classroom Cooking

An example of a Workshop Agenda, that all of the above components were in, is on the next page.

Swing Into Nutrition

NUTRITION EDUCATION WORKSHOP
Program Agenda and Evaluation

		Please circle the appropriate number. (5 is high, 1 low)				
8:30 - 9:15	Welcome to "Swing Into Nutrition"	1	2	3	4	5
9:15 - 9:50	"New And Revised Curriculum Guides"	1	2	3	4	5
9:30 - 9:45	"Time For A Drink"	1	2	3	4	5
9:45 - 10:45	"You Are The Food You Eat"	1	2	3	4	5
10:45 - 11:00	"Let's Go Thru Your Digestion System"	1	2	3	4	5
11:00 - 11:10	"Food Technologist On The Go"	1	2	3	4	5
11:10 - 11:40	Type "A" Everyday	1	2	3	4	5
11:40 - 12:15	"Clean And Squeaky Classroom Cooking"	1	2	3	4	5
12:15 - 12:30	Nutrition Education In Action	1	2	3	4	5

COMMENTS: _____

_____

_____

RATIONALE FOR NUTRITION EDUCATION

CONCEPT: Nutrition Education is a worthwhile part of elementary curriculum because it can help improve the health status of a child.

OBJECTIVES: Develop an understanding of the terms related to nutrition education, recognizes a need.

STIMULUS: Show "Feeding the World's Hungry: Population Explosion" slide/tape. (Project SNAC)
Optional: pictures of deficiency disease symptoms. (Project SNAC)

CONTENT:

- Nutrition science is the study of food and its effect on physical health.
- Nutrition Education is a process which teaches about food and its effect on health, which investigates factors influencing food choices, food safety and sanitation, food related jobs, and consumer competencies.
- Nutrition Education is intended to prevent malnutrition rather than cure it.
- Nutrition is an every day affair and good nutrition practices are based on knowledge about food and health and the development of positive attitudes toward and a value placed on good nutrition.
- Physical well-being depends on adequate nutrition. In the United States, the most common forms of malnutrition are obesity, underweight, tooth decay and anemia.
- Hunger is related to emotional health and intellectual ability.
  - Hunger leads to inability to concentrate, and irritability.
  - Some severe cases of malnutrition (kwashiorkor, pellagra) lead to mental problems.
  - Specific nutrient deficiencies may lead to apathy, mental depression, and emotional instability.

ACTIVITY

MATERIALS: butcher paper, flow pens (1 per group)

"Food Is More Than Just Something To Eat" Handout (in workbook)
"Relationships Of Hunger And Malnutrition To Learning And Behavior"; 1978, State of Florida, Department of Citrus, P.O. Box 148, Lakeland, Florida 33802 (optional)

PROCEDURE: Divide participants into groups of 4 or 5. Have them take a list of signs of malnutrition that they may have seen in students or adults, and what teachers think their role could be. Allow one participant to report each group's findings.

INTEGRATING NUTRITION EDUCATION

2

CONCEPT: Nutrition Education can be interfaced with the existing elementary curriculum.

OBJECTIVE: Identify sequential activities for classroom nutrition education.

STIMULUS: Display of activities for classroom use. Food for tasting.

CONTENT: PROJECT SNAC curriculum guides incorporate activities in major curriculum areas. Activities center around nutrition related facts and principles, valuing activities, and applying knowledge and demonstrating good nutrition practices

ACTIVITY

MATERIALS:
PROJECT SNAC Curriculum Guides (K - 5)
Activity demonstration materials (workbook)
Lesson Plan Format and Scope
"Use Your 5 Senses" - worksheet
"Test Your Sniffer" - evaluation sheet
"Food Games" - worksheet
"Food Technologist On The Go" - evaluation form
"Teacher Responsibilities" - handout and make into transparency (in workbook)
"Lesson Plan Evaluations" - form (in workbook)

PROCEDURE:
- Involve participants in discussion about lesson plan format and scope.
- Review minimum proficiencies by age span and have participants react.
- Demonstrate two or more activities for classroom use. (Suggested: "Use Your 5 Senses" (Grade 2, page 59).
- "Test Your Sniffer" - place 5 different food items in a covered cup which has a hole punched in the cover, and have the staff sniff and then write down what is in each cup.
- "Food Games" (Grade 4, page 24). Go over the Lesson Plan Evaluations and what is expected of them.
- "Food Technologist On The Go". Select 3 food items in plates and have staff taste and rate each food item using the evaluation form.
- "Food Technologist On The Go". This goes along with Lesson #8 in Grade 3.
- Have teachers suggest methods of including nutrition in math, science, reading, health, social studies.
- Explain the teacher's responsibilities of being involved with Nutrition Education by using the "Teacher Responsibilities" handout.

EVALUATION: Have teachers list, in order, the first three activities that they will do in the classroom and report these aloud to the group.

EVALUATION AND TESTING

3

CONCEPT: Effective Nutrition Education improves nutrition knowledge attitudes and practices of participants.

OBJECTIVE: Understand function of student, teacher, and parent testing procedures and the schedule for testing.

STIMULUS: Copies of student tests from the State Department of Education.

CONTENT:

- Students, parents, and staff members in past years have shown improvement in nutrition knowledge, more positive attitudes toward good nutrition and increased willingness to include nutrition education in school activities and improved nutrition practices.
- The change in student knowledge attitudes and practices is evaluated in each nutrition project by the use of criterion-referenced tests in these three domains: cognitive, affective, action.
- Teachers and parents who participate are also tested but not until at least 8 hours of nutrition education has taken place. This is used to evaluate the effectiveness and thoroughness of the instructional program.

ACTIVITY

MATERIALS: Student testing information, copy of appropriate student test, (from State Department of Education) and testing schedule form.
Examples of 1979-80 student test in workbook.
"Lunch Bunch" tags (explain in workbook)
Newsletter (workbook)

PROCEDURE:

- Discuss format and procedures for administering student tests.
- Have participants discuss best time of day for testing.
- Make a master schedule for cognitive and affective testing.
- Teachers discuss methods of assisting in plate waste study through classroom discussion, name tags (LUNCH BUNCH tags).
- Explain parent program format: Newsletter, educational meetings.

EVALUATION: Have teachers write their reactions to the testing schedule (no names) and indicate willingness to encourage parent participation by sending notes home, inviting parents to assist in the classroom nutrition activities.

ROLE OF NUTRITION PROJECT STAFF

4

CONCEPT: The Nutrition Project Staff acts as local resource for nutrition education for staff, students, and parents.

OBJECTIVE: To identify the relationship between the Nutrition Project staff and the participants.

STIMULUS: Film: Jennie Is A Good Thing (Agricultural Extention - University of California) (Project SNAC)

CONTENT:

- Ways in which the Nutrition Project Director may assist teachers:
  1. Provide materials/resource lists for classroom.
  2. Arrange for study trips in connection with nutrition units.
  3. Provide technical assistance in nutrition education.
  4. Provide food for tasting.
  5. Act as classroom speaker/discussion leader.
  6. Meet formally and informally to discuss project progress/problems.
  7. Represent project teachers at Department of Education meetings.
- Ways in which Nutrition Project Assistant may assist teachers:
  1. Provide materials for classroom.
  2. Recommend activities and strategies for classroom.
  3. Act as classroom speaker/discussion leader.
  4. Provide food and equipment for food experiences.
  5. Accompany classes on study trips.
- Ways in which Nutrition Project staff may assist parents:
  1. Provide nutrition education on monthly menus.
  2. Coordinate and publish a nutrition newsletter and/or put information in PTA bulletin.
  3. Provide parent nutrition education programs.
  4. Act as nutrition resource person, in person and by telephone.
- Ways in which Project teachers can assist Project director and Project assistant:
  1. Conduct testing in class when feasible
  2. Plan a time-line for nutrition education activities.
  3. Provide feedback in the form of a written evaluation and verbal reports.
  4. Encourage students to participate in Project activities such as contests.
  5. Recommend new activities or strategies for effective teaching.
  6. Send parent newsletters and menus home regularly.
  7. Provide weekly or bi-weekly nutrition activities for students.

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ACTIVITY

MATERIALS: 5 large butcher paper pieces
Developing a time-line for the year using the "Time-line" handout. (in workbook)

PROCEDURE:
- Leader divides class into 4 groups. Each group makes a list of how to integrate nutrition content into the existing curriculum in one of these areas: Math, Science, Social Studies, Reading/Language Arts.
  Use large pieces of butcher paper.
- Group spokesman shares the group ideas.
- Have each teacher write a lite of 3 barriers to effective integration of nutrition into the curriculum.
- Group leader asks for one barrier from each teacher and records on large butcher paper.
- Group then makes suggestions as to how to remove these barriers. barriers.
- Teachers plan a general time-line for nutrition activities and shares with the group.

EVALUATION: Leader observes group suggestions for integration and rates suggested solutions to barriers and time-line suggestions.

FOOD INTAKE ANALYSIS

5

CONCEPT: Selection of an adequate diet can be based on several alternate guides.

OBJECTIVES: Analyze food records to determine nutritional adequacy of a variety of food combinations based on the Four Food Groups System.

STIMULUS: Nutrition With Nelson filmstrip; Dairy Council of California or PROJECT SNAC.

CONTENT: The Four Food Groups Guide to balanced diet selection is simple and easy to remember. The system of food classification is based on the nutrient content of foods right before they are eaten, rather than on their original source. In order to use the system some rote memorization is necessary which can then be applied to most foods. However, a full understanding of the why behind the Four Food Groups classification requires an understanding of the nutrients involved.

GROUPS

Milk Group	milk, cheese, yogurt	calcium, protein	butter, cream
Meat Group	meat, fish, poultry, dried beans and peas, eggs, nuts, seeds, peanuts	protein, iron, B Vitamin	gravy, lard
Vegetable-fruit Group	all fruits and vegetables, except jellies	Vitamins A & C carbohydrate	jellies, fruit punches, fruit pies, chips
Bread-Cereal Group	whole grain and enriched breads, cereals, noodles, grains	B Vitamins, iron, carbohydrate	cookies, most cakes snack cakes

A balanced daily diet for an elementary school child will include at least:

3 Milk Group servings
2 Meat Group servings
4 Vegetable-Fruit servings to include
  1 citrus or high Vitamin C source
  1 dark green leavy or orange vegetable
4 Bread-Cereal Group servings

The Four Food Groups system is easy to learn and easy to use most of the time especially with foods in their original, unprocessed form. Foods often are mixed by food processors, or "extras" have one or two important nutrients added which makes classification more complex. Some "shakes" have no milk added.

"Extra foods" or "other foods" is a loose category into which foods are classified when the food does not contribute substantially to the protein, vitamin, or mineral needs or when the calories far exceed the nutrients. The latter are often "empty calories" or "junk food".
Examples: oils, fats, sugar products, mustard, colas, punches, cookies, pies, potato chips.

A balanced meal is one that includes at least one serving from each of the Four Food Groups. A serving refers to an amount of food that contributes significantly to the nutritional content of the meal.

Group	
Milk	8 oz. milk or yogurt 1 oz. cheese
Meat	2-3 oz. of meat 1 cup of cooked beans 4 tbsp of peanut butter 2 eggs
Vegetable-Fruit	½ cup cooked or 1 cup raw ½ cup juice
Bread-Cereal	½ cup cooked cereal 1 bowl cold cereal 1 slice bread, roll, tortilla or 5 soda crackers

It is possible to make daily food choices using the Four Food Groups System and still be short in some nutrients. This is frequently discussed when new food selection guides are being developed. The key to successful use of the Four Food Groups is a wide variety of foods from the basic groups rather than "extras", and not overeating from one group at the expense of another.

ACTIVITY

MATERIALS: Grocery bag of food packages or food models (Project SNAC)
Food Group Pictures (workbook)
Nutrition With Nelson booklet (in workbook)
"Leaders" worksheet (in workbook)

PROCEDURE:

- Have teachers draw 6 squares on paper. Label squares--milk, meat, vegetable-fruit, bread-cereal, mixed, extra.
- Discussion leader names foods from grocery bag and holds up each one.
- Have teachers write the name of the food in the appropriate box. When completed, have teachers rotate telling one food from each food group.
- Discussion leader makes a "meal" from suggestions.
- Allow teachers to react to the combinations and evaluate for balanced meal.
- Teachers turn paper over and refer to list on board to plan a balanced daily diet for an elementary child and include serving sizes.

EVALUATION: Observation by discussion leader of classification skills and diet planning and evaluation skills of participants.

DIGESTION AND NUTRIENTS

6

CONCEPT: Food intake affects physical health and well-being.

OBJECTIVE: Develop awareness of nutrients relation to physical health, identifies function and source of major nutrients.

STIMULUS: Filmstrip: Professor Whackos Incredible Pill, Chiquita Banana (To introduce a resource available for classroom use and to introduce the six major nutrients.) (Project SNAC)

CONTENT:

- The three basic functions of food are 1) growth, 2) energy, and 3) regulation of body processes.
- Food is broken down into nutrients during digestion.
- Nutrients provide the cells with materials for metabolism and energy release.
- The six major nutrient classes are protein, fat, carbohydrate, (sugar and starch) vitamins, minerals, and water.
- The body uses almost 50 different nutrients for growing, energy, and regulation of body processes.
- Digestion is a complex process which can be studied in depth or in a simplified manner. A simplified description of the major organs of digestion and the action that occurs at each step is:
  - Mouth: starch is changed to sugar by saliva, food is broken down.
  - Esophagus: chewed food is passed to the stomach by peristaltis but no actual digestion takes place.
  - Stomach: food is broken down by muscle contraction, HCl, and enzymes. Protein digestion is begun, protein is broken into amino acids, carbohydrate digestion continues.
  - Small Intestine: Most digestion takes place here. Nutrients are absorbed into the blood stream.

Protein	amino acids
Fats	fatty acids

  - Large Intestine: Indigestible food passes into the large intestine. Waste is passed out.
- Vitamins and Minerals are not broken apart during digestion. They are absorbed into the blood stream in the small intestine. Vitamin B_{12} is absorved in the large intestine.
- Energy in the cells is derived from three nutritients in the form of calories.

Protein:	4 calories per gram
Carbohydrate:	4 calories per gram
Fat:	calories per gram

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- Vitamins do not provide caloric energy. The "energy" which is often attributed to viatmins is due to the fact that a deficiency of a vitamin may cause the body to operate at less than peak efficiency. Vitamins are part of the enzyme system and act as catalysts in the body functions.
- Minerals are incorporated into the body structure or help to regulate body processes, e.g.

- Calcium	Builds bones and teeth Necessary for muscle contraction and relaxation
- Flouride	Becomes part of tooth and bone structure Regulates hardness of bones and teeth
- Phosphorous	In bones and teeth Needed in every cell in the body
- Iron	In red blood cells Carries oxygen to the cells
- Iodine	Regulates thyroid hormone production

- Vitamins are needed in very small amounts but inadequate intake or physical problems in absorption can lead to deficiency diseases. Each vitamin has a separate function which cannot be duplicated by another vitamin.
- Recommended amounts of nutrients are given in the RDA which stands for Recommended Dietary Allowances. These are based on the most up-to-date information available. They are used to plan and evaluate diets and menus.

ACTIVITY

MATERIALS: "Nutrition Notes" Booklet - 1 per person (in workbook)
RDA sheet - 1 per person (in workbook)
"Digestion Match" game - large poster with pockets (Project SNAC)
"Digestion System" worksheet on page 4 of Grade 3 (in workbook)
1 per person and 1 transparency

PROCEDURE: Divide participants into six groups. Assign each group one nutrient class. The group will plan a "nutrient promotion" of 1 minute in length to compete for "most important nutrient". This information comes out of "Nutrition Notes" booklet, pp. 4 - 18. Give participants about ten minutes. Each group presents their information to the entire group. Group can decide how to present their nutrient. For the digestion part, they can use "Digestion Match" game or "Digestion System" m explaining digestion with an overhead. Information in the brief presentation should include function, digestion, food sources and pros and cons of over and under consumption.

EVALUATION: Participants write one fact learned furing the activity.

THE TYPE "A" LUNCH

CONCEPT: The school nutrition program can be a good foundation for learning and practicing good nutrition.

OBJECTIVE: Evaluate lunch menus using Type "A" lunch criteria.

STIMULUS:
Type "A" lunch poster (Project SNAC) (8½ x 11 in workbook)
Film: "The Real Talking, Singing, Action Movie About Nutrition",
Sunkist (Project SNAC) or
Slide Show: "Pizza Palace" Type "A" lunch slide show developed by a 5th grade class (Project SNAC)

ESSENTIAL CONTENT:

- The school nutrition program has two components:
  1) The lunch served at school.
  2) Nutrition education in class and in the cafeteria.
- The school lunch has two main purposes.
  1) To provide 1/3 of child's daily nutrition needs.
  2) To develop good food habits in elementary years.
- Snacks served at school should reflect the schools commitment to nutrition education.
- School fund raisers which promote sweets should be curtailed if the school is to be a model of good nutrition.
- Bag lunches should make a nutritious contribution to the child's needs and also help develop good eating habits.

ACTIVITY

MATERIALS:
Menus of typical Type "A" lunches (in workbook)
"Type "A" lunch Pattern" - handout (in workbook)
Type "A" menu contest forms - Curriculum Guide, Grade 2, page 39 (copy in workbook)

PROCEDURE:

- Distribute menus and Type "A" lunch criteria. Discuss Type "A" lunch components and compare to Type "A" menu.
- Have teacher or small groups write a Type "A" lunch menu.
- Have teachers compare bag lunch menus and Type "A" lunch menus to compare content, identify adequate lunches and make suggestions for improvements.
- Explain Type "A" lunch menu contest rules. Have teachers make suggestions for student preparation and involvement.

EVALUATION:

- Observe degree to which participants can evaluate school lunches and make suggested changes.
- Ask how many teachers plan to hold a Type "A" menu contest in class.

CLEAN AND SQUEAKY CLASSROOM COOKING

CONCEPT: Nutrition Education prevents contamination of food with food spoilers and to stress good sanitation habits.

OBJECTIVES: To identify sanitation procedures that should be practiced when handling food.

STIMULUS: Display "Meet The Food Spoilers" enlarged poster and pass out handout (1 per person)
Cooking Cart (Project SNAC) (instructions for Cooking Cart in workbook)
Individualized recipe (example - Zucchini Pennies)

CONTENTS: Classroom cooking is much more than just preparing and eating the food. It provides both the children and the teacher with a learning activity that is fun and tastes good, too. It also provides an excellent way of integrating several types of learning experiences. For example, manual tasks such as grating and slicing help with physical development. Social interaction is encouraged as the children work together and learn to share. As they individually measure ingredients and follow recipes, arithmetic and reading skills are practiced. Additionally, activities with food stimulate curiosity and imagination and can be used to teach young children about good, healthful food habits.

Since the U.S. Public Health Service has estimated that over 94% of food poisoning occurs because of unsafe and improper food handling, washing hands before each project involving food cannot be overemphasized. It is strongly recommended, then, that each food activity be preceded by a quick review of safe and clean food handling practices. In such a lesson, the areas to be stressed should include the following: 1) washing hands before beginning food preparation; 2) not touching hair, face, or clothes while handling food; 3) not handling food with bare hands if there are open cuts, sores, or other infections on them; 4) using clean utensils and equipment, and 5) keeping cold foods cold (less than 45 degrees Fahrenheit) and hot foods hot (greater than 140 degrees Fahrenheit). These points are quickly and easily covered by asking children what they should do before they cook and why. They are fast in learning these concepts and enjoy giving the right answers.

ACTIVITY

MATERIALS: Recipe (Zucchini Pennies in workbook)
Food for recipe - you use handout,
"Meet The Food Spoilers" poster and/or transparency,
(in workbook or Page 41, Grade 4 Curriculum Guide)

MATERIALS: (continued)

Paper bag, glue, felt pens, scissors.
Additional information: "Food Poisoning" (in workbook)

PROCEDURE:

- Discuss the importance of good sanitation methods that should be used in their classroom by use of the poster or transparency "Meet The Food Spoilers".
- Provide each person with "Sanitation Susie" puppet. She can be used in the classroom to explain to the children the importance of being clean when cooking.
- Have half the participants start the individualized recipe of your choice to your instructions.
- Have the other half put "Sanitation Susie" together until both processes are done.

EVALUATION: Ask participants the importance of good sanitation methods used in cooking.

Workshop II consists of the following components:

1. Ecology And Nutrition Education
2. Vegetarianism - It's Up To You
3. What's That Label Mean
4. Consumer Skills
5. What About Food Additives?
6. Cooking The Metric Way

An example of a Workshop Agenda, that all of the above components were in, is on the next page.

Swing Into Nutrition

NUTRITION EDUCATION WORKSHOP
Program Agenda and Evaluation

		Please circle the appropriate number. (5 is high, 1 is low)				
8:30 - 9:00	What's New In "Swing Into Nutrition"	1	2	3	4	5
9:00 - 9:40	Vegetarianism - It's Up To You"	1	2	3	4	5
9:40 - 10:30	Man Aid Plants In The Making	1	2	3	4	5
10:30 - 10:45	Break The Snack	1	2	3	4	5
10:45 - 11:10	What's That Label Mean	1	2	3	4	5
11:10 - 11:40	Choosing A Reliable Resource	1	2	3	4	5
11:40 - 12:10	Cook The Metric Way	1	2	3	4	5
12:10 - 12:30	Primer On Food Additives	1	2	3	4	5

COMMENTS: _____

_____

_____

ECOLOGY AND NUTRITION EDUCATION

CONCEPT: Consumer competencies require effective utilization of available food resources.

OBJECTIVES: To identify the ways that inhabitants of this planet are interdependent on finite resources that include food.

STIMULUS: Filmstrip: "What Is Food?" Guidance Associates (11 minutes) (Project SNAC)
Display of nutrition books and pamphlets, nutrition labels, children's cookbooks and recipes.
Tasting samples of nutritious snack food

CONTENT:

- Animals, including man, and plants are interdependent as components of the ecology.
- Every living thing is part of the food cycle. The food cycle includes producers, consumers, and decomposers. Plants are the original food producers. Animals eat plants (herbivores) or other animals that originally ate plants (carnivores) or plants and animals (omnivores). Man is usually an omnivore except in the case of strict vegetarians who eat only plant foods. Microbes and some insects are decomposers. Decomposers break food apart and return it to the soil for future plant growth.
- A food chain is the sequence a food goes through from growth to consumption. It involves a transfer of energy from one form of life to the next.
- Green plants are the food producers of the planet. The process by which a green plant produces food in the form of sugar is photosynthesis (photo-light; synthesis-creation)
- Photosynthesis takes place in the leaves of green plants and requires four things: sunlight, water, carbon dioxide, and water. Chlorophyll traps energy from the sun. This helps to set off a chemical reaction in the leaf. Carbon dioxide and water are combines to form a sugar called glucose. Thus, the light energy from the sun is changed and stored in the glucose. Water and oxygen are given off by the leaf as waste products.

$$6\ H_2O + 6\ CO_2 \qquad C_6H_{12}O_6 + 6\ O_2$$

All of the above information can be reinforced by Lesson 6, Grade 5, Energy For Life, of the Curriculum Guide. Examples of these are in the work book.

- Plants can also produce starch and protein. We usually eat the part of the plant that stores the food; e.g., a beet, a potato, an apple. Food is stored in roots, stems fruits, and seeds.
- The seed's function is the production of a new plant. Each seed has three parts: The outer protective coating, the cotyledon or stored food, and the embryo of the new plant.

CONTENT: (continued)

- Because seeds are full of stored nutrients--starches, fats, proteins, vitamins, minerals--they are good food.
- Legumes are seeds which are grown in pods--peanuts, beans, peas, soybeans, lentils. They are very high in protein and starch.
  All of the above information can be reinforced by Lesson 13, Grade 4 of the Curriculum Guide,"How Plants Work."
- Seeds can be sprouted in the classroom easily. Small gardens can be made from milk cartons for root plants.
- Man competes with insects, other animals and microbes for food. Approximately 1/3 of the world food supply is consumed or destroyed by man's competitors. Some insects are beneficial because they feed on crop-eating insects; e.g., ladybugs, aphids, praying mantis, or produce food; e.g., honey bees. (handout on insects in workbook)
- Insecticides are used to increase crop yield and the world food supply which results in lower prices in the market place. However, the potential danger caused by residues in water, meat and plant foods has led to concern over many insecticides. The Environmental Protection Agency (EPA) has control over the use of insecticides and frequently emits or bans usage of certain ones.

ACTIVITY

MATERIALS:

Peanuts in shell or lima beans
Root view box instructions (Project SNAC) (directions in workbook)
Seed sprouting instructions
"How Plants Work" worksheet, Lesson 13, Grade 4; and "Energy For Life" worksheet, Lesson 6, Grade 5 -- transparencies to be made of worksheets to explain more indepth of this lesson.

PROCEDURE:

- Discussion leader has participants name two foods--one plant, and one animal source, and name all steps in the food chain beginning with the sun and ending with human consumption.
- Discuss methods of conserving food energy such as shorter food chains, as in vegetarian diets.
- Provide each participant with a peanut and have each look for the three parts of the seed, outer coat, cotyledon, and embryo.
- Demonstrate seed sprouting techniques.
- Demonstrate milk carton root-view box. (Project SNAC)
- Have participants suggest activities that can be done in class to grow food.

EVALUATION: Ask how they can apply this information personally and in class by using the worksheets.

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VEGETARIANISM - IT'S UP TO YOU

10

CONCEPT: Consumer competencies require effective utilization non-meat protein substitutes.

OBJECTIVES: To define the major dietary difference between a vegetarian and non-vegetarian diet.

STIMULUS: Display of vegetarian related books, such as Laurel's Kitchen by Lauren Robertson, Diet For A Small Planet by Frances Moore Lappi, and Recipes For A Small Planet by Ellen Buchman Ewald (Project SNAC)
Tasting of high protein non-meat samples
Filmstrip: Vegetarianism In A Nutshell - Polished Apple (17 minutes) (Project SNAC)

CONTENT:

- Vegetarianism is a healthful alternate way of obtaining good nutrition. Unfortunately, all too often the vegetarian is mislabeled as a food faddist. However, nutritional research has shown that a well-balanced vegetarian diet can adequately support life and growth for the serious follower.
- The major distinction of a vegetarian diet is the exclusion of meat, fish and poultry from the diet. Protein is obtained mainly from plant sources. With the use of unique recipes and careful planning, a vegetarian diet can be just as varied and interesting as a meat-containing diet. However, it usually involves a greater degree of knowledge to ensure adequate nutrition.
- Throughout the world almost every national diet has at least one vegetarian specialty that provides adeauate protein. Whether it is because of a restricted food supply or for economic reasons, certain food combinations have evolved which have enabled many cultures to survive and grow. Tortilla and beans from Mexico, soybeans and rice from the Far East, and pasta products from Italy are a few common examples.
- Today, vegetarianism is increasing in popularity for reasons other than survival. Many people feel strongly that a meat-containing diet is ecologically wasteful. USDA figures estimate that it takes about 16 pounds of grain to yield one pound of beef. Thus, obtaining protein from plants instead of animals would appear to increase food available to the world population. Also a properly balanced vegetarian diet is considered by many nutritionists, physicians, and health experts to be more healthful than a meat-containing diet. It is higher in dietary fiber and some of the essential trace minerals which may often be lacking in a diet comprised largely of refined products.

ACTIVITY

MATERIALS: "Proteins: Complete vs. Incomplete", handout and transparency (in workbook)
"Summary of Complementary Protein Relationships" handout and transparency (in workbook)
"What's A Vegetarian?" transparency (in Lesson 12, Grade 5 Curriculum Guide) (in workbook)

PROCEDURE:

- Show filmstrip Vegetarianism In A Nutshell.
- Go over what vegetarian means and its relationship to complete protein versus incomplete with overhead.
- Pass out "Summary of Complementary Protein" handout and have participants name one complete protein and one incomplete.

EVALUATION: Have participants answer the questions on "What's A Vegetarian?"

"WHAT'S THAT LABEL MEAN?"

11

CONCEPT: Consumer competencies require that an individual base food selection on reliable resource.

OBJECTIVE: To identify ways the nutrition label benefits the consumer.

STIMULUS: Display of nutrition labeling information (Project SNAC) "Nutrition Facts To Guide Your Food Choices", poster, (Cereal Institute, 135 South LaSalle Street, Chicago, Illinois 60603)

CONTENT:

- There is a great advantage to knowing how to read a label. Because we are continually confronted with new products, it is difficult for the uninformed person to know what he is getting, nutritionally as well as economically, Due to a lack of product information, a great deal of concern regarding the correlation between food and health has resulted.
- For example, the three most common food-related diseases--obesity, heart disease, and dental caries--are becoming widespread problems amont the population. The overconsumption of sugar, fats and cholesterol are among the most publicized offenders. Yet, until recently, the consumer has not been informed about the quality of his food or how it relates to his overall health and nutrition.
- In 1975, it became law that certain products display a "nutritional label." The two types of foods for which a "label" is now mandatory are (1) food products to which a nutrient has been added or replaced (e.g., cereals, breads, and other grain products made from refined flour), and (2) food products for which a nutritional claim has been made (e.g., "high in vitamin C", "low in calories", or a "good source of iron").
- The label itself supplies valuable consumer information and is presented in an easily understood, standard format. It identifies the product's ingredients, and it supplies nutritional data that allows comparisons between different brands of the same foods. Even more importantly, it serves as an educational tool to aid the consumer in selecting a healthful, balanced diet.

ACTIVITY

MATERIALS: "We Want You To Know About Nutrition Labels On Food" - FDA handout (in workbook)
"Nutrition Label Terms You Should Know"- FDA handout (in workbook)
"Which Is The Better Buy" (in workbook)

PROCEDURE: Divide the audience into groups and have each group review labels. (Example: cereals, tang, canned fruits and vegetables) and critique them. Report findings aloud.

EVALUATION: Have each group fill out "Which Is The Better Buy" and explain why they chose that one.

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CONSUMER SKILLS

CONCEPT: Consumer competencies require that an individual base food selection on reliable information and resources.

OBJECTIVE: Critically evaluate food and nutrition claims on a logical and nutritionally informed basis.

Identify reliable nutrition information resources available to consumers.

STIMULUS: Display of health food ads.
Filmstrip: Food Fads: You Bet Your Life. Walt Disney (8 minutes) and shows that no one food can be described as a "health food". (Project SNAC)

CONTENT:

- Enriched: a term that refers to the addition of specific nutrients as established by a Federal standard (e.g., enriched bread has thiamin, riboflavin, niacin, iron added).
- Fortified: a term that refers to the addition of specific nutrients. Amounts added are usually in excess of those normally found in the food. Some foods are selected for fortification because they are an appropriate carrier for the nutrients (e.g., milk is usually fortified with Vitamin D).
- Sugars: All sugars, regardless of form, are primarily carbohydrate and in amounts normally consumed offer little in the way of nutrients to the total diet.
- Megavitamins: high intake of vitamins, often 1000 times the RDA vitamins taken in megadoses are a form of medication. Self diagnoses and treatment with megadoses of vitamins is not recommended because of possible complications. Often based on the assumption that "if a little is good, more is better."

ACTIVITY

MATERIALS: Various nutrition books or pamphlets
"Choosing A Reliable Resource" - handout (in workbook)
"Questions Most Frequently Asked About Sugar" - handout (in workbook)

PROCEDURE:

- Divide the audience into four groups and assign each group to complete one task and report back to the group.
- Plan discussion of pros and cons of fortification and enrichment of foods.
- Have participants rate the nutritional significance of these sugars: white, brown, honey, raw (on a scale of 0 - 10). Discuss responses.
- Evaluate a nutrition book or pamphlet using reliable resource guidelines.
- Have group reports and discussion.

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EVALUATION: Discussion leader will note ability to critically evaluate nutrition information.

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WHAT ABOUT FOOD ADDITIVES

13

CONCEPT: Consumer competencies require the knowledge of food selection to the additives added.

OBJECTIVE: To identify the reason for using food additives in food.

STIMULUS: Display of nutritional labels
"Primer On Food Additives" - handout
"Five Functions Of Additives" - handout

CONTENT:

- Food additives is a controversial subject to many Americans. Though they have been around since the dawn of civilization (when man first discovered salt preserved his meat), suspicion and even antagonism surround their use. Science has advanced tremendously in the area of food technology to assure that there is proper use of the substances which are added to the food supply. In addition, the allowable amount and the substance selected are governed by rigidly structured laws and regulations established nationally by the Food & Drug Administration (FDA) and the United States Department of Agriculture (USDA). State and local health departments are also authorized to enforce these laws.
- By definition, an additive is a substance which is added to a food to be eaten with that food. Currently, there are over 10,000 different substances from which food processors can choose. In order to be legally classified as such, an additive must serve one or more of the following functions:
  - to improve nutritional value.
  - to enhance quality or consumer acceptability
  - to improve keeping quality
  - to make the food more readily available
  - to facilitate food preparation
- In today's active lifestyle, food additives have become an integral part of modern food technology. They have made a bountiful, safe supply of a large variety of good quality foods possible. Without additives, the abundance of convenience products, on which so many of us rely, would be nonexistent. Overall, it is clearly evident that food additives beneficially contribute to a wholesome and readily available food supply.

ACTIVITY

MATERIALS: "Primer On Food Additives" - handout, 1 per person (in workbook)
"Five Functions Of Additives" - handout, (in workbook)

PROCEDURE:

. Use "Five Functions Of Additives" as an overhead and explain the functions as

- An additive must improve the nutritional value of a food. For example, nutrients are added to breakfast cerials to fortify or enrich them.
- An additive must enhance the quality and consumer acceptability of a food. For example, salt and sugar are added to foods such as pre-sweetened cereals and salted snack crackers to improve their flavors.
- An additive must improve a product's keeping quality. For example, sodium proprionate (which is a natural cheese mold) is added to bread to increas its shelf life.
- An additive must help to make food more readily available. For example, the use of ripeners (ethylene gas) speeds the ripening of fruit.
- An additive must facilitate food preparation. For example, dough conditioners (calcium sulfate) are added to flour to improve the quality of bread.

. Handout "Primer On Food Additives" - one per person for their own knowledge.

. Many of the substances used as additives are directly related to, or are derived from, natural sources.

- Often these are the same substances that nature itself used to naturally preserve, improve the texture of, or enhance the flavor of foods.

. Examples of naturally occurring food additives include:

- sodium (used as a preservative and flavor enhancer:
- sugar (used as a preservative, flavor enhancer, and browning agent)
- pectins and vegetable gums (used as thickeners and stabilizers)
- citric acid (from citrus fruits and berries--used as an anti-oxidant to prevent browning)

EVALUATION: Have participants name a reason why we use food additives in our food.

COOKING THE METRIC WAY

14

CONCEPT: Nutrition Education flexibility in ideas, fluency in creating alternatives.

OBJECTIVE: To identify metric measuring utensils through preparation of a recipe.

STIMULUS: Display "The Metric System" poster (Project SNAC)
"Metric Measurements" - handout
"Snack Metric" - recipe

CONTENT: Because food can be a good learning tool, it is important to select food projects which will be meaningful. This is easily accomplished as most classroom subjects readily relate to introducing food and nutrition. For instance, the study of countries and cultures can naturally initiate projects involving ethnic foods. And not all activities need to involve cooking. Simple tasting exercises, such as bites of ethnic fruits and vegetables, can serve to broaden the children's experience as well as encouraging them to try new foods. Or, in this case, food is a learning tool to learn metric measurements.

Also, keep in mind clean hands, equipment, and utensils; no touching hands, face or clothes when handling food.

ACTIVITY

MATERIALS: "Metric Measurements" - handout, 1 per person (in Lesson 16, Grade 4 of Curriculum Guide and in workbook)
Food for recipe
Recipe (in workbook)
Metric scale and measuring spoons (if you do not have metric measuring utensils, make a scale on the outside of a styrofoam cup at intervals of 25 ml.--a regular teaspoon = 5 ml.)

PROCEDURE: Go over the "Metric Measurements" on an overhead. Discuss the importance of sanitary methods while preparing the recipe. Have the participants make "Metric Snack" using sanitary methods and metric measurements.

EVALUATION: Did participants measure their recipe in metrics?

SNAC
San Mateo Nutrition Activity Curriculum
"Swing Into Nutrition"

SAN MATEO CITY SCHOOL DISTRICT

50 Peninsula Avenue

P.O. Box K

San Mateo, California 94402

PS 011895

Dr. Julian Crocker, Superintendent
Dr. Lillian Wehmeyer, Assistant Superintendent

Miss Deborah Barley
Nutrition Education Specialist
Project Director

Funded 1976-80 By California State Department of Education
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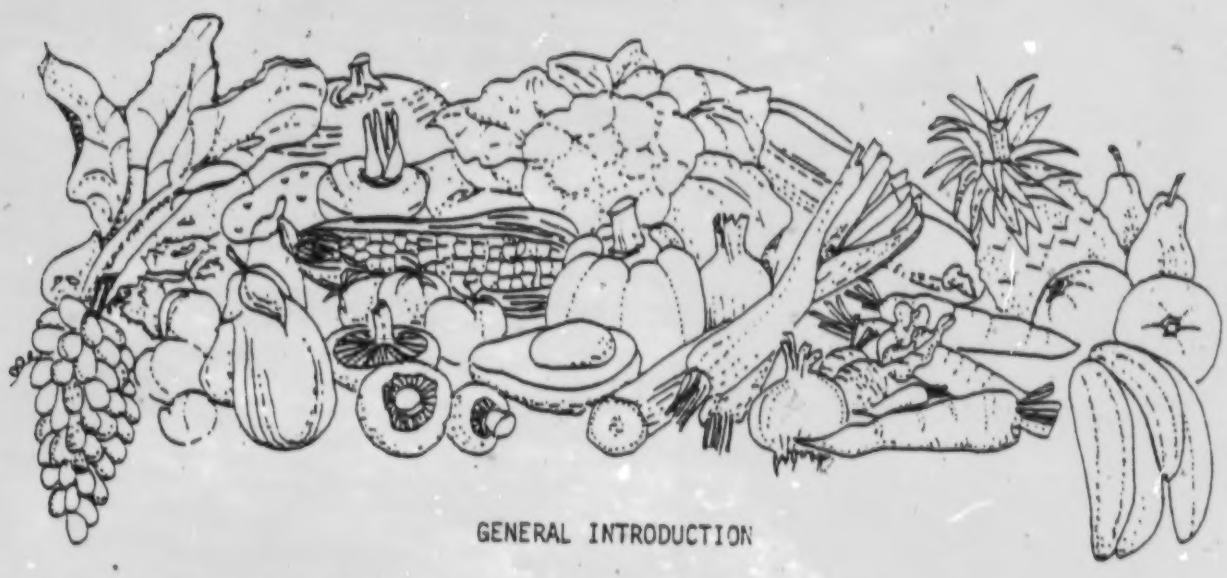
January 1980
San Mateo City School District



GENERAL INTRODUCTION

Nutrition Education starts with you! The Staff Workbook is to accompany the Staff In-Service Guide. The materials needed in each lesson on the Staff In-Service Guide are included here in the Workbook under the same lesson number.

Each of the following handouts can have copies made of each or made into overhead transparencies. When making copies of the materials, it is advisable to use a variety of colored paper to reproduce them. Under the various lessons use the handouts as a guidance and make changes that are needed for you.

All the lessons and activities mentioned in this Staff workbook have been designed, tested, evaluated and articulated by Project teachers and nutritionists. They have proven effective for all participants.

Remember: The nutrition activities involving children are not only educational but fun.

So join us and .....

"SWING INTO NUTRITION"

ACKNOWLEDGEMENTS

Many, many people have helped and contributed valuable time in the development, teaching, and evaluation of the San Mateo Nutrition Education Project. The Nutrition Education Staff in San Mateo City School District wishes to acknowledge and thank these persons for their special achievements.

Food Service Director	Carvill Veech (Project Director 1976-79)
Nutrition Education Aide	Lenore Hicks
The Board of Education	Donald Hill Sue Lempert Albert Di Matteo Robert Braun Jeanne Schlueter
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AND

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SAN MATEO CITY SCHOOLS NUTRITION EDUCATION PROJECT

STAFF WORKBOOK

LESSON PLAN NUMBER	TITLE OF ACTIVITIES	LESSON OBJECTIVE	PAGE(S)
1	RATIONALE FOR NUTRITION EDUCATION	To develop an understanding of the terms related to nutrition education.	1 - 33
	"Food Is More Than Just Something To Eat" - handout		2 - 33
2	INTEGRATING NUTRITION EDUCATION	To identify sequential activities for classroom nutrition education.	34 - 41
	"Use Your 5 Senses" - handout		35
	"Food Technologist On The Go" - evaluation form		36
	"Test Your Sniffer" - evaluation form		37
	"Food Games - handout		38
	"Lesson Plan Evaluation - evaluation form		39
	"Lesson Plan and Format - overhead transparency		40
	Teacher Responsibilities - handout		41
3	EVALUATION AND TESTING	To understand function of student, teacher, and parent testing procedures.	42 - 92
	"Lunch Bunch" - plate waste study		43 - 44
	"Newsletter" - example		45 - 46
	"Student Tests" - CA. State Dept of Ed. (1979-80)		47 - 92
4	ROLE OF NUTRITION PROJECT STAFF	To identify the relationship between the Nutrition Project staff and participants	93 - 94
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5	FOOD INTAKE ANALYSIS	To analyze food records to determine nutritional adequacy of a variety of food combinations	95 - 124
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LESSON PLAN NUMBER	TITLE OF ACTIVITIES	LESSON OBJECTIVE	PAGE(S)
6	DIGESTION AND NUTRIENTS	To develop awareness of nutrients relation to physical health; identifies function and source of major nutrients.	
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	"RDA" - handout		126 - 154
	"Digestion System - handout		155
			156
7	THE TYPE "A" LUNCH	Evaluate lunch memus using Type "A" Lunch criteria.	
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	Menus of Typical Type "A" Lunch - handout		158
	"Type "A" Lunch Requirements" - handout		159
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8	CLEAN AND SQUEAKY CLASSROOM COOKING	To identify sanitation procedures that should be practices when handling food.	
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			173 - 176
9	ECOLOGY AND NUTRITION EDUCATION	To identify the ways that inhabitants of this planet are interdependent on finite resources that include food.	
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	"How Plants Work" Lesson 13, Grade 4		178 - 179
	"Energy For Life" Lesson 6 Grade 5		180 - 182
	"Insects - An Introduction" handout		183 - 187
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STAFF WORKBOOK

LESSON PLAN NUMBER	TITLE OF ACTIVITIES	LESSON OBJECTIVE	PAGE(S)
10	VEGETARIANISM - IT'S UP TO YOU	To define the major dietary difference between a vegetarian and a non-vegetarian diet.	
	"Proteins: Complete vs Incomplete - handout and transparency		189 - 193
	"Summary of Complementary Protein Relationships" - handout and transparency		190
	"What's A Vegetarian?" - transparency		191
			192 - 193
11	WHAT'S THAT LABEL MEAN	To identify ways the nutrition label benefits the consumer.	
	"We Want You To Know About Nutrition Labels On Food" - FDA handout		194 - 198
	"Nutrition Terms You Should Know" - handout		195 - 196
	"Which Is The Better Buy" - transparency and handout		197
			198
12	CONSUMER SKILLS	To evaluate food and nutrition claims on a logical and nutritionally informed basis.	
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	"Questions Most Frequently Asked About Sugar" - handout		200 - 205
			206 - 208
13	WHAT ABOUT FOOD ADDITIVES	To identify the reason for using food additives in food.	
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	"Five Functions Of Food Additives" - handout and transparency		210 - 217
			218.
14	COOKING THE METRIC WAY	To identify metric measuring utensils through preparation of a recipe.	
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	"Metric Measurements" - handout		220
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RATIONAL FOR NUTRITION EDUCATION

Lesson 1 contains the following handout to be used with Lesson 1 of the Staff In-Service Guide.

	Page(s)
1. "Food is More Than Just Something To Eat" Booklet	2 - 33

FOOD IS MORE THAN JUST SOMETHING TO EAT.

U.S. Department of Agriculture Home and Garden Bulletin No. 216

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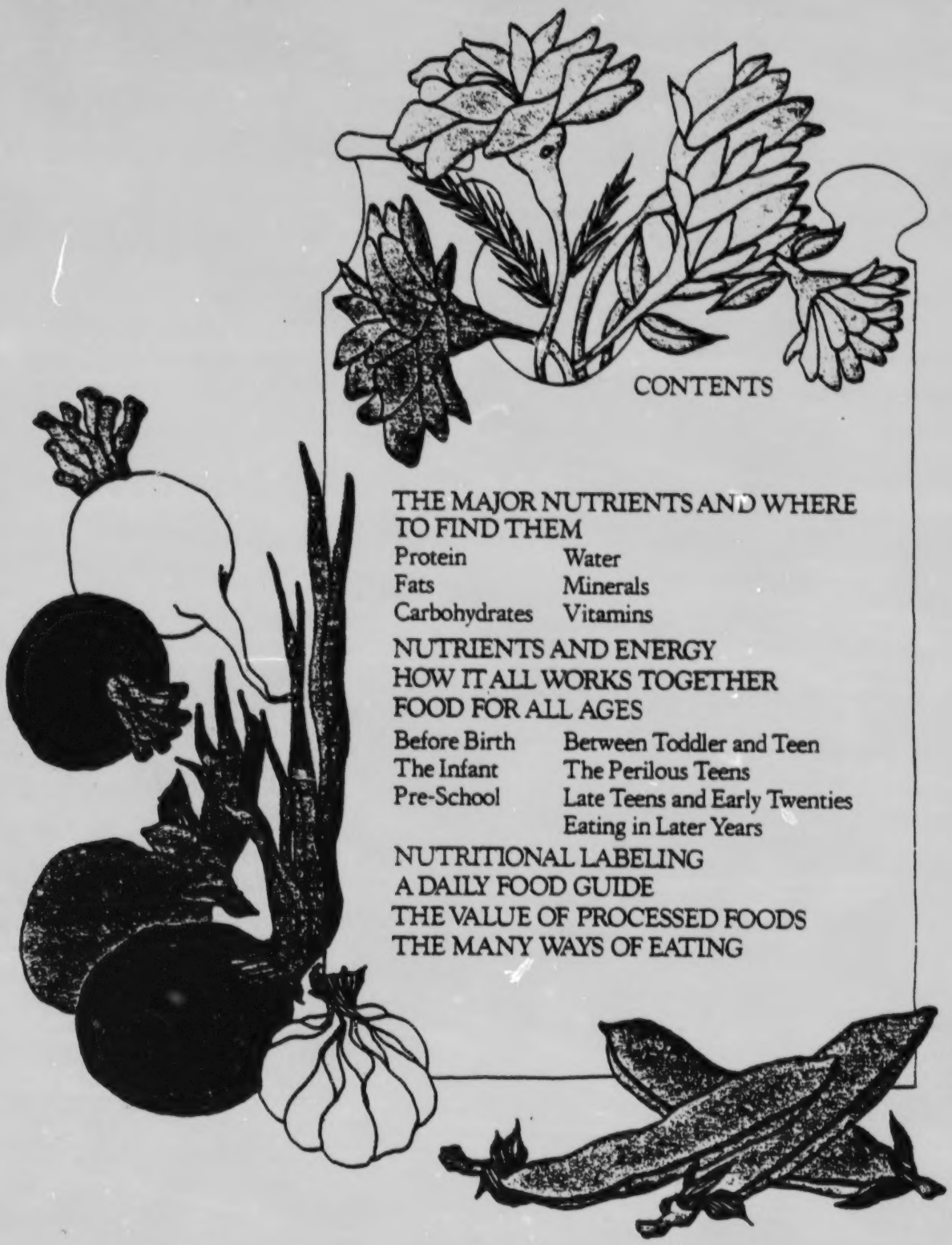

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THE MAJOR NUTRIENTS AND WHERE TO FIND THEM

Protein
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Carbohydrates
Water
Minerals
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NUTRIENTS AND ENERGY

HOW IT ALL WORKS TOGETHER

FOOD FOR ALL AGES

Before Birth
The Infant
Pre-School
Between Toddler and Teen
The Perilous Teens
Late Teens and Early Twenties
Eating in Later Years

NUTRITIONAL LABELING

A DAILY FOOD GUIDE

THE VALUE OF PROCESSED FOODS

THE MANY WAYS OF EATING

Reprinted from a booklet originally prepared and distributed by the U.S. Department of Agriculture and the U.S. Department of Health, Education, and Welfare, in cooperation with the Grocery Manufacturers of America and The Advertising Council.

July 1976

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FOOD IS MORE THAN JUST SOMETHING TO EAT

In this land of plenty millions of Americans aren't eating wisely. Not because they haven't enough to eat, but because they eat too many of the wrong things or too little of the right.

In short: *Food is what you eat, nutrition is how your body uses food.* And if you aren't eating foods to meet your body needs, you may be suffering from poor nutrition. Some of the damages caused by severe malnutrition may be irreversible.

Before you decide this booklet isn't meant for you, let us mention a few facts that may change your mind:

What a young girl eats today may have an effect on the kind of pregnancy she will have years from now.

What a pregnant mother eats may have an effect on her child's growth and development.

What a child eats affects the way he grows and develops.

What a person eats—as an infant, a child, or an adult—can affect the length and quality of his life.

This booklet can help you find out what is wrong with what you are eating as well as what is right. Read it. And if you still think it isn't meant for you, pass it along. With so many Americans eating unwisely, you're bound to know someone it can help.

We acknowledge with thanks the advice and counsel of an *ad hoc* panel of the Food and Nutrition Board of the National Academy of Sciences.

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Food is the basis of life.

It is the source of health and well-being, gives you the energy you need for every d[illegible]iving, affects your weight and height and even your strength to a great extent. [illegible]n other words, everything in life begins with food and there is much to the sa[illegible]g, "You are what you eat."

Food contains protein, carbohydrates, fats, vitamins, minerals and water. All of these are nutrients: that is, they nourish the body.

Since food is vital, you need to know about the nutritive content of foods, which ones are the best sources of the various nutrients, and how to combine them into a healthful, balanced diet.

There is a great deal of talk about one particular group of nutrients, vitamins. Vitamins are very important but you should know that vitamins do not create energy or build tissue—the substance of the body—by themselves.

Many of them are involved in the release of energy within the body and in the process of tissue-building.

Some of them control the ways the body handles food. There are a number of different vitamins and they are found in different foods in varying amounts.

So food contains nutrients, some more than others, and you need to know how to select the combinations of food that will give you the nutrients you need.

The important thing is to remember that no one food does everything and all foods have something to offer. A variety of different types of foods will provide all the nutrients most of us need.

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THE MAJOR NUTRIENTS AND WHERE TO FIND THEM

PROTEIN.

After water and possibly fat, protein is the most plentiful substance in the body. The substances, called enzymes, which control the processes that keep the body working are made of protein. Protein is also part of the hemoglobin molecule in red blood cells that carries oxygen into the system.

And the antibodies in the blood stream that fight off disease and infection are also protein. Another important use of protein in the body is to build the muscle tissue which holds the bone structure together and provides the strength to move and work. Most Americans get more than enough protein.

Where is protein found? Meat, poultry, fish, milk, cheese and eggs provide good quantities of it. Bread and cereal are also important sources.

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And such vegetables as soybeans, chickpeas, dry beans and peanuts are also good sources of protein. You do not have to load up on meat, poultry or eggs to get enough protein in your diet.

Combining cereal or vegetable foods with a little milk, cheese or other animal protein can provide good protein in your diet.

For example, eat cereal with milk, rice with fish, spaghetti and meat balls, or simply drink a glass of milk during a meal. All these combinations provide the high quality protein the body needs.

FATS.

Fats provide energy and add flavor and variety to foods. They make meals more satisfying. Fats carry vitamins A, D, E and K and are essential parts of the structure of the cells which make up the body's tissues.

Our body fat protects vital organs by providing a cushion around them.

Fats are plentiful in butter, margarine, shortening, salad oils, cream, most cheeses, mayonnaise, salad dressing, nuts and bacon.

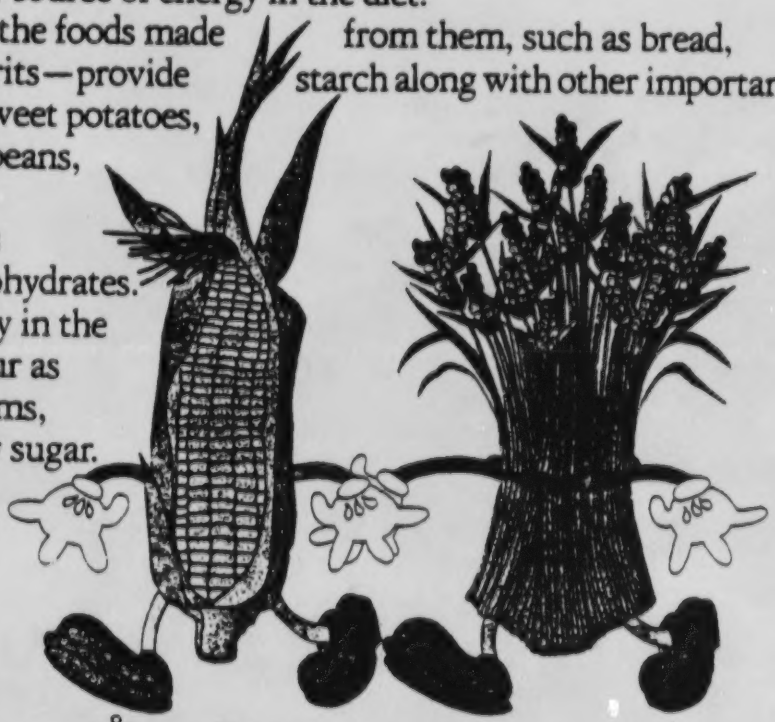
CARBOHYDRATES.

These are starches and sugars found in cereal grains, fruits, vegetables and sugar added to foods for sweetening.

Carbohydrates are the major source of energy in the diet. Wheat, oats, corn and rice—and the foods made from them, such as bread, spaghetti, macaroni, noodles or grits—provide starch along with other important nutrients. So, too, do potatoes, sweet potatoes, and vegetables such as peas, dry beans, peanuts and soybeans.

Most of the other vegetables contain smaller amounts of carbohydrates.

In vegetables they are usually in the form of starch; in fruits they occur as sugar. And, of course, candies, jams, molasses and syrups are primarily sugar.



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WATER.

Water is a most important nutrient. Water stands next to air in importance to life. You can get along for days, even weeks, without food but only a few days without water.

Water is necessary for all the processes of digestion.

Nutrients are dissolved in water so they may pass through the intestinal wall and into the blood stream for use throughout the body. Water carries waste out of the body and water also helps to regulate body temperature.

The body's most obvious source of water is the water a person drinks, but some is produced by the body's burning of food for energy. Coffee and tea are mostly water, and so are fruit juices and milk.

Soup is a water source and so are many fruits and vegetables. Even meat can be up to 80 percent water.

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MINERALS.

The most abundant mineral in the body is calcium and, except for iron, it is the most likely to be inadequate in the diets of many age groups.

(From the age of 9, the diets of girls and women may lack as much as 25 to 30 percent of the calcium they need.)

Almost all calcium, and most phosphorus, which works closely with calcium in the body, is in bones and teeth.

The rest plays a vital role in tissue and body fluids. Soft tissue, or muscle, especially has a high phosphorus content. Calcium is required for blood to clot and for the heart to function normally. The nervous system does not work properly when calcium levels in the blood are below normal.

Most people who buy from the milk counter are stocking up on calcium supplies.

In the U.S. we rely on milk as a basic source of calcium, and two cups of milk, or an equivalent amount of cheese or other dairy products except butter, go a long way toward supplying all the calcium needed for the day.

But milk is not the only source. Dark green leafy vegetables like collards, mustard greens or turnip greens provide some calcium, and salmon and sardines supply useful amounts of it if the very tiny bones are eaten.

IRON.

Iron is another essential mineral. Women of child-bearing age require more iron than men. The diets of infants and pregnant women may need special attention to see that they contain the iron needed.

Unfortunately, only a few foods provide iron in very useful amounts. However, liver, heart, kidney and most lean meats are generously supplied with it. So are shellfish, particularly oysters. Whole grain and enriched breads and cereals can provide 20 to 25 percent or more of the daily iron need.

Dark green leafy vegetables are also sources of iron.

IODINE.

The most important fact about iodine is that a deficiency of it can cause goiter—a swelling of the thyroid gland. The most practical ways to be sure of getting enough iodine are to use iodized salt regularly and add sea food to the diet whenever possible.

OTHER ESSENTIAL ELEMENTS.

Calcium, iron and iodine are not the only minerals you need. Most of the others—zinc, copper, sodium, potassium, magnesium and phosphorus—are widely available in so many foods that a little variety in making your choice

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at the grocery store takes care of them easily. Magnesium, for example, abounds in nuts, whole grain products, dry beans and dark green vegetables.

Phosphorus shows up in the same foods that supply you with protein and calcium, although leafy vegetables contain little phosphorus.

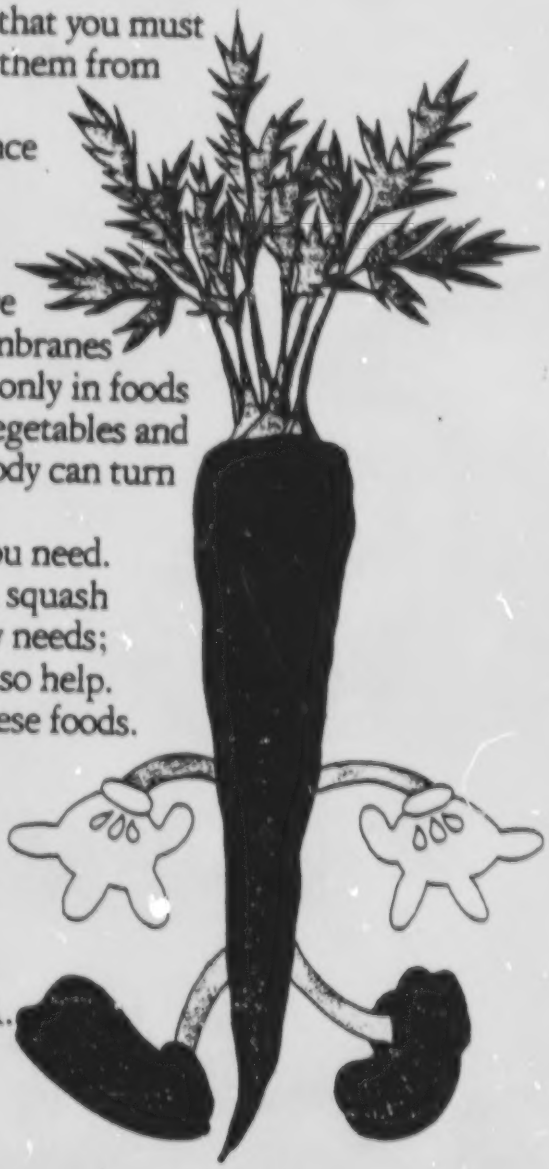
FLUORINE.

Fluorine—an element that helps protect teeth from decay—is not so readily found in food. Many metropolitan areas add minute amounts of fluorine to local sources of drinking water.

VITAMINS.

Scientists know of a dozen or more vitamins that you must have to enjoy good health. Ordinarily, you can get them from a well-chosen assortment of everyday foods.

A few of these vitamins are of great importance and you should know what foods provide them.



VITAMIN A.

This vitamin plays a very important role in eye function, and in keeping the skin and mucous membranes resistant to infection. Although vitamin A occurs only in foods of animal origin, the deep yellow and dark green vegetables and fruits supply a material—carotene—which your body can turn into vitamin A.

Produce can easily supply all the vitamin A you need. Such items as collards, turnip greens, kale, carrots, squash and sweet potatoes can more than take care of daily needs; yellow peaches, apricots, cantaloupe and papayas also help.

Many people, however, do not regularly eat these foods.

Liver is an outstanding source of vitamin A. A two-ounce serving of cooked beef liver provides more than 30,000 international units of the vitamin. That's six times more vitamin A than you would need during the day. Kidney is also an excellent source of vitamin A.

There are plenty of other sources of vitamin A. Whole milk is a source, but skim milk doesn't have any vitamin A unless it is fortified, that is, vitamin A has been added to it.

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Cheese made from whole milk, or margarine enriched with vitamin A, both supply this vitamin.

THE B VITAMINS.

Three of the best known vitamins—riboflavin, thiamin and niacin—release the energy in food. They also have a role in the nervous system, keep the digestive system working calmly, and help maintain a healthy skin.

Vitamin B_2 (riboflavin) is easy to find and extremely important to your diet. It is plentifully supplied by meats, milk, whole grain or enriched breads and cereals.

Organ meats (liver, kidney, etc.) also supply this vitamin.

A lack of thiamin (vitamin B_1) causes beriberi. Fortunately, this disease is now almost nonexistent in the U.S., although it is still seen in some alcoholics.

Thiamin is abundant in only a few foods. Lean pork is one. Dry beans and peas, some of the organ meats, and some nuts supply some thiamin.

Whole grain and enriched cereals and breads are also dependable sources of the vitamin. Niacin can be found in whole grain and enriched cereals, meat and meat products, and peas and beans.

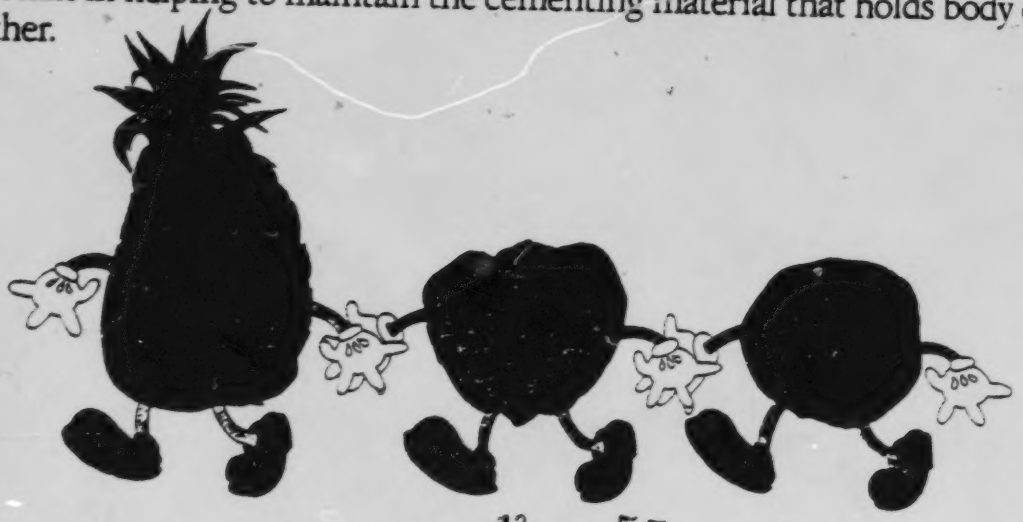
Other B vitamins such as B_6, B_{12} and folacin are needed to maintain normal hemoglobin, the substance in blood which carries oxygen to the tissues. B_{12} occurs in foods of animal origin.

Strict vegetarians run a risk of developing the symptoms of B_{12} deficiency; these include soreness of the mouth and tongue, numbness and tingling in the hands and legs, anemia and loss of coordination.

Folacin is available in many foods but in small quantities.

VITAMIN C.

Vitamin C, ascorbic acid, is not completely understood, but it is considered important in helping to maintain the cementing material that holds body cells together.



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The citrus fruit juice you may have for breakfast can give you over half of the vitamin C needed for the day.

In fact, unless good foods are consciously avoided, the rest of the fruit and vegetables eaten during the day will help to provide the vitamin C required.

Potatoes and sweet potatoes provide helpful amounts of vitamin C and so do tomatoes and peppers. In addition, the green vegetables such as broccoli, turnip greens, raw cabbage and collards make a contribution of vitamin C.

VITAMIN D.

Although few foods contain vitamin D, it is readily available in milk fortified with it. Sunlight enables the body to produce vitamin D if it has a chance to shine directly on the skin.

Vitamin D is important in building strong bones and teeth and is needed throughout the growth period.

Without it the body cannot absorb the calcium supplied by food and for this reason milk is often fortified with vitamin D. Adults rarely need more vitamin D than they get in food and from the sun, but infants and young children sometimes do not get enough. A disease called rickets results from a lack of vitamin D. Children who suffer from this disease have absorbed too little calcium, their bodies cannot form strong and rigid bones and consequently they may have enlarged joints, bowed legs, knock knees or beaded ribs.

On the other hand, too much vitamin D can be dangerous.

This causes a calcium overload in the blood and tissues. Infants given too much vitamin D may develop calcium deposits in the kidneys and other organs and end up with permanent kidney damage.

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VITAMIN E.

Vitamin E is known to be essential but its exact role in the body is not fully understood. Vitamin E is abundant in vegetable oils and margarine and contained in such foods as wheat germ and lettuce.

If a diet regularly includes fruits, vegetables, vegetable oil, milk, meat and eggs, it is not lacking in vitamin E.

VITAMIN K.

Vitamin K is essential for the manufacture of a substance that helps blood to clot. Vitamin K is widely distributed in a variety of foods such as the green and leafy vegetables, tomatoes, cauliflower, egg yolks, soybean oil and any kind of liver.

NUTRIENTS AND ENERGY.

Almost all foods provide energy—some more than others.

This energy is measured in calories. Foods rich in fats, starches or sugars contain large amounts of calories—or energy.

Fat is the most concentrated source of energy. Ounce for ounce, it provides more than twice as much energy as protein or the carbohydrates.

Foods that contain a lot of water, like watermelon and cucumbers, have few calories because water, which makes up most of their weight, provides no calories and so no energy. When you eat a diet that furnishes more energy—or calories—than you need, the excess supply is stored in the body as fat.

And when you continue to overeat you become overweight or fat. When you eat less calories than the body uses, you lose weight.

HOW IT ALL WORKS TOGETHER.

The body can pick and choose what it needs from the nutrients in the diet, and see to it that each organ or part of the body gets exactly the right amount of nutrients —not more and not less. But, if the diet lacks some of the needed nutrients, the body has no way to get them.

The body keeps busy, working twenty-four hours a day, always building itself up, repairing itself, and discarding waste products.

It needs a constant supply of nutrients to do its job and when it receives the nutrients it applies them where they are needed. Let's take calcium as an example.

The body needs calcium to clot blood, to make the nerves and muscles function properly and to develop bones. If your body does not receive enough calcium to do its work from the food you eat, it steals some from your bones.

If the stolen calcium is not replaced the body is in trouble—though you may not

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realize this fact for some years. (As much as one-third of the normal amount of calcium may be withdrawn from an adult's bones before the loss shows up on an X-ray film.)

It is not only what the nutrients do once the body gets them, it is what they do with each other that makes the difference in our health and well-being.

No single nutrient can function properly alone. It takes calcium to build strong bones but that is just the beginning.

Without vitamin D, the calcium is not absorbed from the intestines.

Protein is needed for the framework of the bone and to form part of every cell and all the fluids that circulate in and around the cells.

It takes vitamin C to help produce the materials between cells.

This is why nutritionists suggest eating appropriate quantities of a wide variety of foods—including milk products, meat or an alternate, fruits and vegetables, bread and cereals—in order to provide diets with all the needed nutrients.

The more varied your diet the better off you will be—tomorrow as well as today.

The foods you eat must sustain you for today and help build up your body for a lifetime.

FOOD FOR ALL AGES.

Regardless of age, everyone needs the same nutrients but often in different amounts. People doing hard physical labor need more energy than those who are less active. Women need more iron than men.

The six-footer needs more food than a little person; the steelworker more than the clerk. When a patient is on the mend from an illness, he may need more nutrients than when he is in good health.

One thing is certain: nutrition affects everyone from the day he is born, actually even before he is born.

Nutrients for the unborn child's growth and development come from the mother, which means that her diet during pregnancy is especially important.

While parents guide their children to good eating habits they might take a good look at their own food attitudes. If the food they don't like is never served, then the family will never get a chance to eat it regardless of how nutritious it might be.

Changing poor food habits is usually harder than starting out with good food habits, but it can be done.

The parents' example will teach children to eat foods that are not their favorites, usually without the children ever even thinking about it.

The more foods people learn to enjoy, particularly among the fruits and vegetables, the easier it will be for them to change their diets if it becomes necessary

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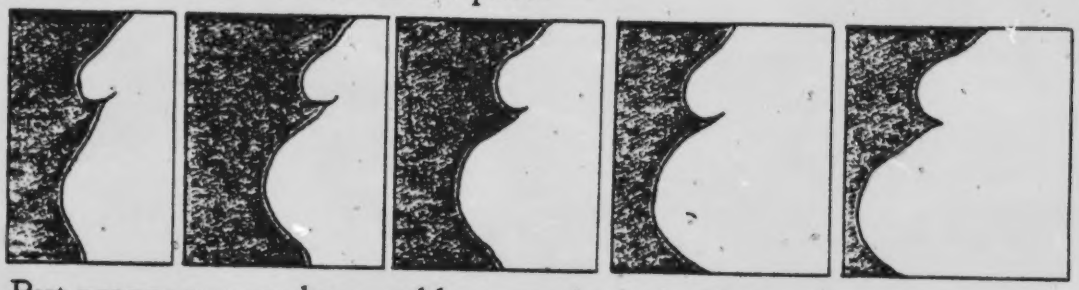
because of health problems, military service, foreign travel or some other reason.

Of course, somewhere along the road to a healthy old age, you learn that you must fit your diet to the amount of energy you use.

Regular exercise, like proper food, is a vital factor in continuing good health.

BEFORE BIRTH.

The woman who reaches child-bearing age well nourished and who maintains a good diet during pregnancy is more likely to have a healthy pregnancy and a healthy baby than the woman whose diet is poor.



But pregnancy can be a problem, particularly when expectant mothers are still teenagers. The body must cope with its own growth needs as well as the needs of the baby. A young girl—17 years or younger—who is in less than the best of health when she becomes pregnant, is borrowing trouble for herself and lending it to the child she carries.

And it is not just the poverty-stricken teenager who faces such problems.

Many a woman with enough money for a good diet copes with pregnancy in a state of semi-starvation because of the cult of slimness.

Pregnancy for an older woman can also be a hazard if her body stores of nutrients are already depleted by numerous pregnancies.

A woman who has always eaten well will not, ordinarily, have to make many changes in her diet because of pregnancy.

A daily diet during pregnancy should include at least two servings of lean meat, fish, poultry or eggs; four or more servings of vegetables and fruits including some which are good sources of iron, vitamin A and vitamin C; four servings of enriched or whole-grain breads or cereals and three or more cups of milk. Some of the milk and other foods such as margarine may be fortified with the vitamin D which is needed during pregnancy.

These foods provide the extra proteins, vitamins and minerals needed to maintain the expectant mother's body and for the baby's growth.

It may be hard to get all the iron and folic acid needed through food alone and the doctor will often prescribe a supplement to supply them.

Healthy women usually gain an average of 24 pounds during pregnancy.

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Pregnancy is certainly no time to try to lose weight; there will be time enough for that later. If a mother decides to nurse her baby, she should continue to include foods which will give her more protein, vitamins, minerals and calories.

A pint of milk and an egg added to a diet which was nutritionally adequate before pregnancy will provide all the additional protein and almost half of the vitamin A needed. Using milk as the source of extra protein also contributes to the mother's need for fluid when nursing.

The continued use of the green vegetables and fruits recommended for pregnancy will supply most of the other minerals and vitamins needed.

THE INFANT.

A child grows and develops more rapidly during the first few years of life than at any other time. Thus good nutrition is especially important. Feeding does more than nourish the infant's body, it also can help a child to establish warm human relationships with parents and other persons.

Milk is the baby's first food—milk either from the mother's breast or from a bottle. Since milk supplies a large proportion of the nutrients needed during the first two years of life, the choice of kind of milk or formula must be made with care.

Human milk is custom-made for the baby, is clean as it comes from the breast, can save a lot of work, and can be a satisfying experience for both mother and baby.

Human milk will ordinarily supply adequate amounts of all of the essential nutrients during the first few months of life with the exception of vitamin D, fluoride and iron.

If a commercially prepared infant formula, evaporated milk or homogenized whole milk is used, it will usually have vitamin D added to it. If not, then the baby will need to be given a vitamin D supplement.

The baby needs vitamin C early in life. Human milk and commercially prepared infant formulas usually provide adequate amounts of vitamin C.

If the baby is being fed evaporated milk or cow's milk formula, then vitamin C should be given in the form of drops. Otherwise a fresh, frozen or canned fruit juice that is naturally rich in vitamin C or fortified with vitamin C can be used.

A source of iron should also be added to the infant's diet early in infancy. Unless

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the baby is receiving iron-fortified formula, the doctor may suggest using an iron-fortified infant cereal or medicinal iron, beginning between 1-2 months of age.

Whether or not a fluoride supplement is given to the infant will depend upon how much water the infant takes and the amount of fluoride in the water supply of the area.

Solid foods, such as cereals, strained fruits and vegetables, may be added by 1 to 3 months of age. Gradually other foods such as egg yolk, strained meat and fish are added. Be careful in choosing commercially available strained foods for baby; there are wide variations among them in the amount of calories and other essential nutrients.

By the time the baby is six months old, he or she will be receiving some "table food." When 7-9 months old, a baby is usually ready for foods of coarser consistency–chopped or junior foods. By then he or she will likely be on three meals a day with mid-morning and mid-afternoon snacks.

PRE-SCHOOL.

During the second and third years of life, the child grows much less rapidly than during the first year. Little children still need foods that help them grow and provide the energy they need.

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The diet started in infancy should be continued with larger servings of meat, fish, and eggs, as well as fruits and vegetables, plenty of milk and whole grain cereals and bread. Children in this country often get less vitamin A than they need.

Parents need to try especially hard to include dark green and yellow vegetables such as broccoli, collards, kale, carrots, sweet potatoes and winter squash in children's meals. Butter and fortified margarine also supply generous amounts of vitamin A.

Children may be short of vitamin C, because they do not eat enough citrus fruits or juice, tomatoes, raw cabbage or other foods which are rich sources of that vitamin.

Fortified milk is a good source of vitamin D. The child who drinks less than one pint of milk a day may need a supplemental supply.

Preschool children may need snacks to tide them over to the next meal.

Some well chosen snacks are milk, small pieces of fruit, cut-up raw vegetables, cheese cubes, crackers spread with cottage cheese or peanut butter, and cereals.

Pick snacks that carry their weight in food value—don't let sweets become the rule.

Children should be served small-sized portions and come back for "seconds" if necessary. Some children get fat because they are taught to eat more than they need, even as infants. It is possible that the habit of overeating in infancy and early childhood may continue to obesity in later years.

BETWEEN TODDLER AND TEEN.

The elementary school child needs the same kind of foods the preschooler does, but, perhaps, larger servings.

Going to school, however, calls for a routine and a schedule. The preschool child can play for a while until he or she feels like breakfast. Not so the school child; there are carpools, buses and school bells to be coped with.

Going to school may be the beginning of the child's independence in choosing food. The child may need help in learning how to make wise choices.

If the elementary school child is getting too plump, take a good look at the amount of exercise he is getting and at what and how much he is eating.

THE PERILOUS TEENS.

There are two good reasons for concern about the food habits of teenagers. Teenagers are casting off the habits of childhood while still trying to find their own identities. As a result, good food habits may be lost for a while.

One out of every four mothers has her first child when she is less than 20 years old. The teenage appetite is often huge, but appetite alone is not enough to insure that the teenager will get all of the nutrients he or she needs.

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During their teens, boys and girls grow at a faster rate than at any other time except in infancy. A boy's nutritional requirements during the time he is becoming a man are higher than at any other time in his life.

Those of a girl becoming a woman are exceeded only during pregnancy and lactation (the period following birth when the mother's breasts are manufacturing milk). So, a pregnant teenage girl has even greater nutrient needs.

A teenage boy may suddenly shoot up as much as four inches in height and gain 15 pounds in weight in a year.

A teenage girl's total gain is not usually so large, but it is considerable.

Growth involves more than increases in height and weight alone. Body fat is lost while bones increase in density and muscles develop in size and strength.

The endocrine glands—the glands that manufacture, or secrete, hormones, the chemical substances that control many body processes—are growing and developing.

The teen years are also a period of stress—physical and mental.

Teenage eating habits are often bad and the reasons are not hard to find: school, clubs and part-time jobs keep teenagers away from home at mealtime.

Their eating habits are being influenced by friends more than by parents.

Some skip breakfast because they don't leave enough time for it. Some choose snacks that are too rich with fats and sugar.

Teenage girls sometimes eat too little because they dread getting fat, whether they are overweight or not.

Diets have to be planned carefully for boys as well as girls. Both have such great need for protein, the B vitamins and vitamin C—and in fact every nutrient—that they cannot afford to fill up on foods that contribute empty calories alone.

A teenage boy usually winds up with a better diet than a teenage girl because his need for calories is so great that if food is available he will eat it.

Some boys, however, may neglect foods containing important nutrients.

A teenage girl's need for calories is considerably less. She is more likely to get enough vitamin C because of her liking for salads and fruits, but her protein and iron intake may be low.

Both boys and girls tend to neglect foods containing calcium, vitamin A, riboflavin, and iron. During the growth spurt, ample supplies of all the nutrients are needed for muscle, bone and blood.

The overweight teenager may eat the same kinds of foods as his average friend, but too much of them. Rich desserts and many of the usual snack foods could be replaced with fresh fruits and vegetables. Also, he may be less active.

Instead of a crash diet to take off pounds in a hurry, an overweight teenager should develop the well-balanced eating habits he needs for the rest of his life.

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The underweight adolescent may or may not be satisfied with his state and may need help in learning how to gain weight.

It should be noted that anemia may occur in both sexes at this age, although the monthly blood loss from menstruation puts girls in the more dangerous position.

Acne, the other blight on the teen years, is usually caused by hormone changes and not by diet.

LATE TEENS AND EARLY TWENTIES.

Growth ends somewhere during the later teens and early twenties when maturity is reached and the body's slowdown begins.

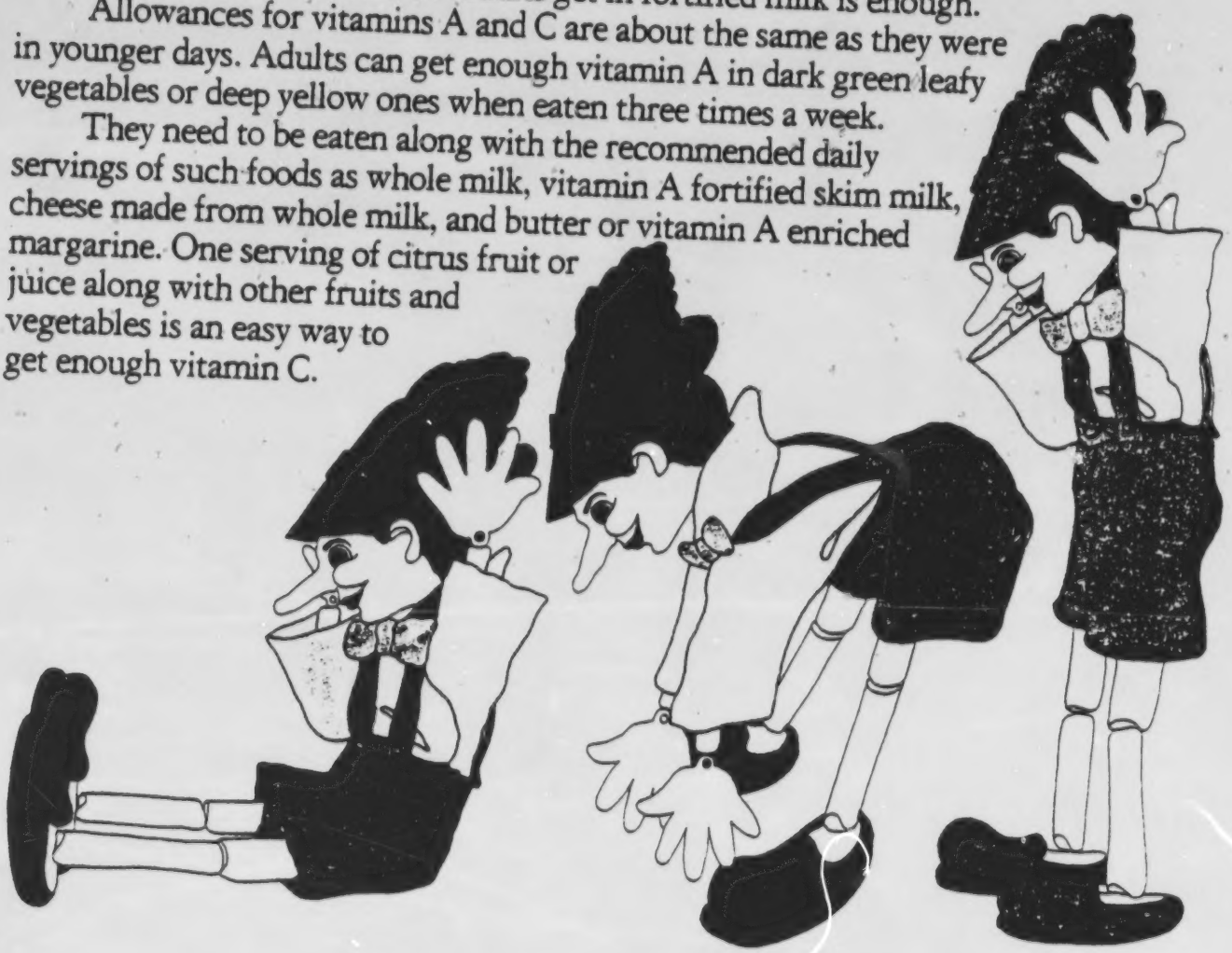
Compared with their youth, men and women need less protein and calcium—about two cups of milk a day provides enough calcium.

Men usually get enough iron without making a special effort. Women must be sure to get extra supplies in their diets.

The amount of vitamin D adults get in fortified milk is enough.

Allowances for vitamins A and C are about the same as they were in younger days. Adults can get enough vitamin A in dark green leafy vegetables or deep yellow ones when eaten three times a week.

They need to be eaten along with the recommended daily servings of such foods as whole milk, vitamin A fortified skim milk, cheese made from whole milk, and butter or vitamin A enriched margarine. One serving of citrus fruit or juice along with other fruits and vegetables is an easy way to get enough vitamin C.



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Most adults use fewer calories than they did in their teens and weight control may be a problem.

Gross overweight usually means medical problems, so, generally, an adult should try to maintain for the rest of his life the weight considered normal for him at age 25. This means that the right amount of food at 30 may be too much at 40.

Calorie counting becomes necessary. A mere 20 extra calories a day could add two pounds of weight in a year.

What's two pounds? It's 80 extra pounds between the ages of 25 and 65!

Adults have some choice about which foods to limit. Such foods as pastries, cakes, salad dressings, gravies and nuts, if eaten frequently may supply too many calories for many people.

Frying may add fat no matter how well the food is drained.

Sugar, candies, syrup, jellies, soft drinks and alcohol add calories but few nutrients to the diet. Of course, cakes, dressings, jams and candy do make the diet more interesting, but when used, the extra calories should be compensated for by reducing portions of food. Foods such as meats, milk, fruits, vegetables and cereals or bread are necessary—the need for vitamins, minerals and protein continues even though calories are being reduced.

Be careful when you are counting calories. A diet that furnishes 1,500 calories a day could be lacking in some important nutrient, depending on the choices made.

The easiest way to bring the total nutrient value of a low-calorie diet up to standard is to be sure that each food does double duty.

For a mid-morning pickup, fresh fruit or juice can provide vitamin C and A with relatively fewer calories.

By the same token, a plate of fresh fruit, instead of apple pie for dessert, can provide vitamins C and A in addition to calories.

EATING IN LATER YEARS.

The process of aging begins the moment a person is conceived.

It is hard to say exactly when youth becomes middle age, or middle age becomes old age. Calendars tell only part of the story.

Some men and women in their eighties are still going strong; some are feeble in their sixties. The cells of an older person's body undergo changes and some of the cells are damaged. The body's organs don't function as well.

Vision is not as clear, hearing is not as sharp, and the digestive systems may act up.

The older person's condition is affected by all the accidents, infections and other hazards of living that he has experienced during his lifetime.

This is when the results of a poor diet through the years can be seen.

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All the nutrients that have been supplied—or not supplied—are giving the cells more—or less—strength to fight the aging process and disease.

The food likes and dislikes developed over the years may become barriers to good nutrition. Older people need fewer calories.

Men and women 55 to 75 years old need 150 to 200 fewer calories per day than when they were 35 to 55, but their needs for essential nutrients are unchanged. It is more important than ever for each food to do double duty. There is not much room for low nutrient, high calorie food.

Old age like the teen years is a time of learning to live with changes. Often the changes are serious and tiring.

The strains of old age may be made worse by changes in living patterns. The eating habits of the elderly can be influenced by loss of teeth, retirement, reduced income, moving out of a familiar house or neighborhood, or the number of people with whom they live.

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NUTRITIONAL LABELING

It is one thing to know what nutrients we need; it is another to get them. Of the 8,000 or more items in a large food store today, half or more are packaged foods. Industry and government, therefore, have cooperated to provide for the listing of nutrient content on packaged foods.

This new development, "nutritional labeling," represents a major change in food labeling. Foods with nutritional labeling have a *Nutrition Information* panel on their packages. On the panel the consumer will find the serving size, number of servings in the container, and the calories, protein, carbohydrate and fat per serving.

In addition, the statement gives the percentage of the U.S. Recommended Daily Allowance (U.S. RDA) of protein and seven major vitamins and minerals per serving.

Additional nutrients may be listed. Also, information on sodium, cholesterol and unsaturated fat content may appear.

Nutritional labeling is voluntary except when a nutrient is added or a special nutritional or dietetic claim is made, and then the label *must* provide nutritional labeling. The standard for declaring the nutrients, the U.S. Recommended Daily Allowance (U.S. RDA), has been developed by the Food and Drug Administration

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of the Department of Health, Education, and Welfare from the Recommended Daily Dietary Allowance set by the National Academy of Sciences' Food and Nutrition Board. The National Academy has developed twenty-four sets of allowances covering different age groups.

These have been simplified for nutritional labeling and consumer use as the reference standard U.S. RDA. Why nutritional labeling?

Nutritional labeling provides a means of identifying the specific nutrients and the nutrient content of foods. It also provides nutrient information for those new fabricated products which often don't seem to fit into traditional food guides.

Persons interested in weight control or those on special diets for other reasons will find the information helpful in selecting the proper foods.

Nutritional labeling, in conjunction with the traditional methods of selecting a diet of many kinds of foods or a diet based on the basic four food groups, can help the consumer improve and maintain the quality of his diet.

A DAILY FOOD GUIDE

The daily food guide below presents foods in four groups on the basis of their similarity in nutrient content. The four groups are:

the meat group
the vegetable-fruit group
the milk group
the bread-cereal group

MEAT GROUP

FOODS INCLUDED: Beef; veal; lamb; pork; variety meats, such as liver, heart, kidney. Poultry and eggs. Fish and shellfish.

As alternates—dry beans, dry peas, lentils, nuts, peanuts, peanut butter.

AMOUNTS RECOMMENDED: Choose two or more servings every day. Count as a serving: 2 to 3 ounces of lean cooked meat, poultry or fish—all without bone.

One egg, 1/2 cup cooked dry beans, dry peas, or lentils, or 2 tablespoons peanut butter may replace one-half serving of meat.

VEGETABLE-FRUIT GROUP

FOODS INCLUDED: All vegetables and fruits. This guide emphasizes those that are valuable as sources of vitamin C and vitamin A.

Sources of Vitamin C:

Good sources—Grapefruit or grapefruit juice; orange or orange juice; cantaloupe; guava; mango; papaya; fresh strawberries; broccoli; brussels sprouts;

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green pepper; sweet red pepper.

Fair sources—honeydew melon; lemon; tangerine or tangerine juice; watermelon; asparagus tips; raw cabbage; collards; garden cress; kale; kohlrabi; mustard greens; potatoes and sweet potatoes cooked in the jacket; spinach; tomatoes or tomato juice; turnip greens.

Sources of Vitamin A:

Dark green and deep yellow vegetables and a few fruits: apricots, broccoli, cantaloupe, carrots, chard, collards, cress, kale, mango, persimmon, pumpkin, spinach, sweet potatoes, turnip greens and other dark green leafy vegetables, winter squash.

AMOUNTS RECOMMENDED:

Choose four or more servings every day, including:

One serving of a good source of vitamin C or two servings of a fair source.

One serving, at least every other day, of a good source of vitamin A. If the food chosen for vitamin C is also a good source of vitamin A, the additional serving of a vitamin A food may be omitted.

The remaining one to three or more servings may be of any vegetable or fruit, including those that are valuable for vitamin C and for vitamin A.

Count as one serving: 1/2 cup of vegetable or fruit; or a portion as ordinarily served, such as 1 medium orange or potato, half a medium grapefruit or cantaloupe, or the juice of one lemon.

MILK GROUP

FOODS INCLUDED: Milk—fluid whole, evaporated, skim, dry, buttermilk.

Cheese—cottage; cream; Cheddar-type, natural or processed. Ice cream. Yogurt.

AMOUNTS RECOMMENDED: Some milk every day for everyone.

Recommended amounts are given below in terms of 8-ounce cups of whole fluid milk:

Children under 9. . . . . 2 to 3	Adults. . . . . 2 or more
Children 9 to 12. . . . . 3 or more	Pregnant women. . . . . 3 or more
Teenagers. . . . . 4 or more	Nursing mothers. . . . . 4 or more

Part or all of the milk may be fluid skim milk, buttermilk, evaporated milk or dry milk.

Other milk products, such as cheese, ice cream or yogurt, may replace part of the milk. The amount it will take to replace a given amount of milk is figured on the basis of calcium content. Common portions of cheese, yogurt and ice cream and their milk equivalents in calcium are:

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1-inch cube Cheddar-type cheese	=1/2 cup milk
1/2 cup yogurt	=1/2 cup milk
1/2 cup cottage cheese	=1/3 cup milk
2 tablespoons cream cheese	=1 tablespoon milk
1/2 cup ice cream or ice milk	=1/3 cup milk

BREAD-CEREAL GROUP

FOODS INCLUDED: All breads and cereals that are whole grain, enriched or restored; check labels to be sure.

Specifically, this group includes: breads; cooked cereals; ready to eat cereals; cornmeal; crackers; flour; grits; macaroni and spaghetti; noodles; rice; rolled oats; and quick breads and other baked goods if made with whole-grain or enriched flour.

Bulgur and par-boiled rice and wheat also may be included in this group.

AMOUNTS RECOMMENDED: Choose four servings or more daily. Or, if no cereals are chosen, have an extra serving of breads or baked goods, which will make at least five servings from this group daily.

Count as one serving: 1 slice of bread; 1 ounce ready-to-eat cereal; 1/2 to 3/4 cup cooked cereal, cornmeal, grits, macaroni, noodles, rice, or spaghetti.

OTHER FOODS:

To round out meals and meet energy needs, almost everyone will use some foods not specified in the four food groups. Such foods include: unenriched, refined breads, cereals, flours; sugars; butter, margarine, other fats. These often are ingredients in a recipe or added to other foods during preparation or at the table.

Try to include some vegetable oil among the fats used.

Milk provides protein, riboflavin, vitamin A, and many other nutrients. Cheese and ice cream also supply these nutrients, but in different proportions. When fortified with vitamin D, milk is the major source of this vitamin in the diet.

Meat, poultry, fish and eggs from the meat group are valuable sources of protein, iron and the B vitamins—thiamin, riboflavin and niacin. Dry beans, dry peas and nuts are almost as useful and are usually listed in the meat groups.

The vegetable-fruit group supplies most of the vitamin C and vitamin A in the diet. Concentrate on the dark green and deep yellow fruits and vegetables for their vitamin A value and on citrus fruit and a few others for vitamin C.

A short list cannot do justice to all of the useful sources. Cantaloupe, strawberries and mangoes are also good sources of vitamin C. Nor does a food have to be among the best sources of vitamin C. It is just that it may take more to fill the need.

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The bread-cereal group with its whole grains, enriched bread and other cereal products, provides protein, iron, and several vitamins. One ounce of ready-to-eat cereal does about as much as 1/2 to 3/4 cup of cooked cereal product, cornmeal, macaroni, noodles, rice or spaghetti.

Fats, oils, sugars and sweets are not usually shown on food guides. They are common to every diet, however, and are energy sources. They also make the diet more attractive and acceptable to some people. Some of the fats and oils provide vitamin A and E; some furnish essential fatty acids. Since these foods are apt to be high in calories, they should be used in moderation.

Foods from each group can be part of every meal, but they do not have to be.

Also, some foods fall into several groups, pizza for example.
It is desirable, however, to have the proper number of servings from each of the groups in the course of the day.

The same food guide can work for everyone. The difference is only in the quantity; more of everything for the ravenous teenager, and choices with fewer calories for the dieting adult; more of certain foods for the pregnant woman, and less of these foods for her husband.

Don't neglect breakfast. Many people skip breakfast but scientists have found much evidence that a good breakfast can make a person more alert and productive throughout the morning. And a good breakfast can provide a good start to meeting the daily nutrient needs.

THE VALUE OF PROCESSED FOODS

Fresh or frozen? Canned or dried? Instant or from scratch? Which foods have the nutrients? Which do not? They all do. All foods have their place.

And virtually all food in its place is good food. Some foods are safer to use when they are processed. Some are more appealing when fresh.

Packaged, pasteurized, fortified milk has been around so long no one thinks of it anymore as a processed food, but it is. Because it is pasteurized—or processed—milk is now safe to drink. Unpasteurized milk may carry disease-producing germs.

Whole grain breads and cereals retain the germ and outer layers of grain where the B vitamins concentrate. Milling wheat to white flour refines them out.

Since many people seem to prefer white bread, it is wise to choose the enriched product because of added nutrients.

Brown rice has food value that unenriched polished white rice does not; enriched, parboiled or converted rice retains most, though not all, of the nutrients.

Buy the mix or do it yourself? It is all the same nutritionally if the ingredients

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listed on the label are used in the same amounts and are the same as the ingredients you would use doing it yourself.

Foods in the frozen food case offer as much food value as those in the produce section of the store. It just depends on which foods one prefers and the cost factor.

Any loss of vitamin C in frozen fruits is negligible. The blanching process does, however, reduce slightly the vitamin C and some of the other water-soluble vitamins and minerals in frozen vegetables.

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Properly packaged frozen meat, poultry and fish carry the same food value they would if they were purchased directly from the butcher or the fish market.

Fresh or raw foods are not necessarily better than canned or frozen ones. It depends on how they are handled. The vitamin C value of frozen, reconstituted orange juice is the same as the juice squeezed fresh from oranges.

Leafy, dark green vegetables and broccoli packed in crushed ice keep practically all of their vitamin C on their way to market. Left in the refrigerator for 5 days or so they lose about half of it. Cooking will also cause losses.

Although the loss may be great, these vegetables contain large amounts of vitamins and they still provide generous amounts of vitamin C and vitamin A when they are eaten. Raw cabbage, on the other hand, stores well.

It holds its vitamin C well even at room temperature.

Sweet potatoes actually improve in storage. The vitamin A value of sweet potatoes increases during the maturing period before they reach the retail store.

Berries need tender care. They lose their vitamin C in a hurry if they are capped or bruised.

Water-soluble vitamins do just what their name implies: they dissolve in water and if excess water is used in cooking, and then discarded, a loss occurs.

Leftovers and foods cooked ahead of time may save time, but they can have a loss in food value. Cooked vegetables lose about one-fourth of their vitamin C after about a day in the refrigerator.

They lose about one-third after two days. Careful planning is needed if food values are to be protected.

When meat or poultry is stewed, some of the B vitamins end up in the stock, that is, the left-over liquid. With a kettle of stock you are well on your way to a nourishing soup, a flavorful liquid in which to cook rice, or to use as the liquid base for scalloped or creamed dishes.

Cold makes the difference for frozen foods. Most frozen foods should be stored far below the 32 degree freezing point to retain the vitamin C.

Acid foods like orange and tomato juice, however, hold on to their vitamin C tenaciously.

Frozen concentrated orange juice which is kept at only 32 degrees loses only 5 percent of its vitamin C in a year.

This is not true for most other foods. At 0 degrees Fahrenheit, frozen beans, broccoli, cauliflower, and spinach lose one-third to three-fourths of their vitamin C in a year. If you cannot get your freezer to 0 degrees or below, remember that some stored foods will not hold their best nutritive value. It is wise to buy in smaller quantities and not hold them as long.

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Other nutrients are not as unstable as vitamin C and so are not as affected by temperatures.

THE MANY WAYS OF EATING

Americans pick and choose their diets from the traditions of the whole world.

Whether it is pumpkin pie or Chinese fried rice, much of our food has a special history and we are the richer for it.

Our food has all sorts of social, geographical and cultural traditions. Baseball and hot dogs, San Francisco and Chinese food, New Orleans and shrimp gumbo, the Southwest and chili are a few of these traditions.

Everyone needs the same nutrients but we can take them as we like them.

Protein is important to us all. If our heritage is Mexican-American, we can get a healthy amount of protein at a low cost in such dishes as refried beans.

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Or iron. Jewish women, like all women, have a special need for iron in their diets. Of the many Jewish foods, one of the most popular is a good source of iron, chopped chicken livers.

Families from Puerto Rico need milk as everyone else does.

They get a fair amount of it in *cafe con leche* or in *flan.* Hankering for soul food, you may find yourself fixing grits and turnip greens—and when you do you are serving up a large portion of iron, vitamin A, B vitamins and vitamin C.

Every cultural tradition allows for enough good food for people to be healthy as well as happy at the dinner table.

Traditional eating patterns and habits may suffer a change on their way to this country, or from farm to city, but the nourishment in the food itself remains the same.

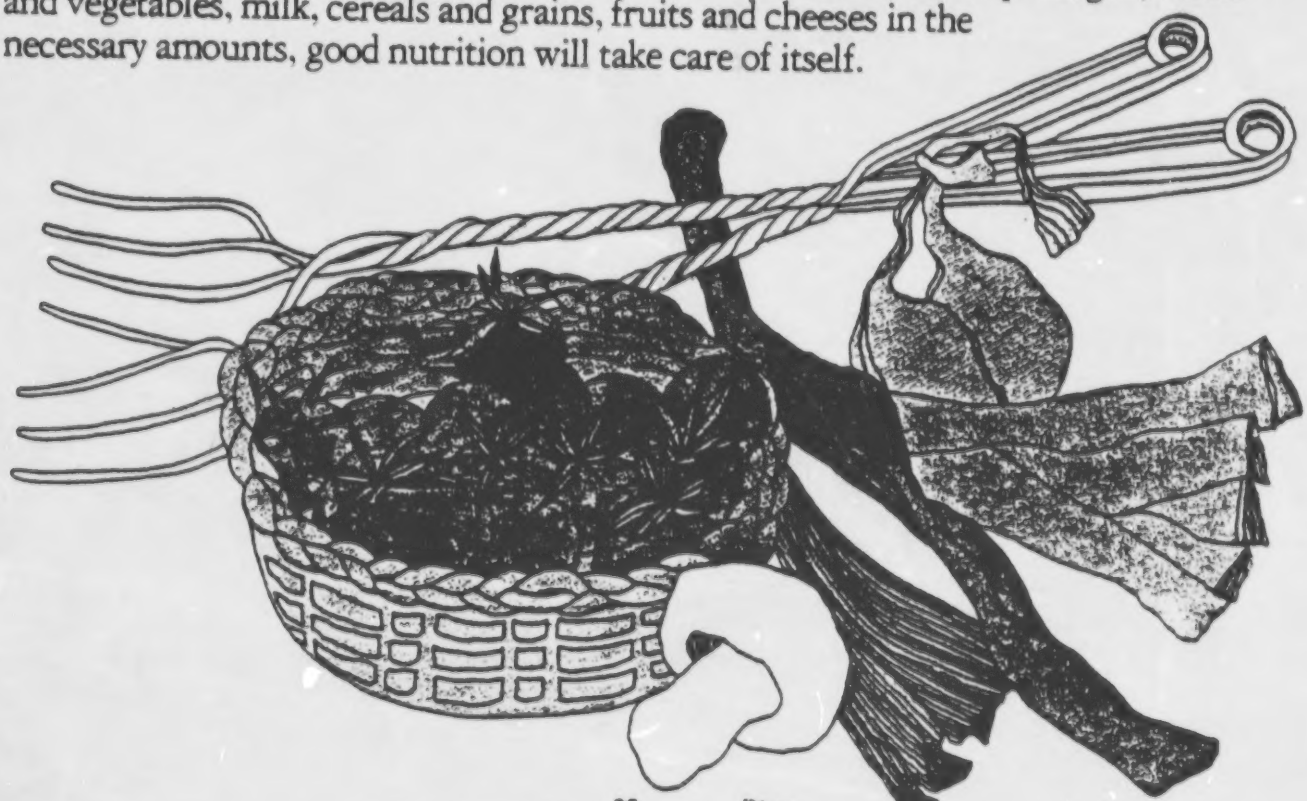
Rice, for example, is a mainstay at Puerto Rican tables; it is just as important when the family moves to New York.

But there are times when the tradition itself changes, catching the homemaker unaware. Older Mexican-Americans like their tortillas made from cornmeal.

Their children often prefer them made from wheat flour, and thus lose out on the calcium that attached itself to the corn in the processing.

For all its people, however, the United States has one of the best food supplies in the world, whether measured in terms of quantity, quality, variety, or availability.

If your diet contains a good variety of foods, whether fresh or packaged, meats and vegetables, milk, cereals and grains, fruits and cheeses in the necessary amounts, good nutrition will take care of itself.



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INTEGRATING NUTRITION EDUCATION

Lesson 2 contains the following handouts to be used with Lesson 2 of the Staff In-Service Guide.

		Page(s)
1.	"Use Your 5 Senses"	35
2.	"Food Technologist On The Go"	36
3.	"Test Your Sniffer"	37
4.	"Food Games"	38
5.	"Lesson Plan Evaluation"	39
6.	"Lesson Plan and Format"	40
7.	"Teacher Responsibilities"	41

Name _____

Use Your 5 Senses

Put down the words that best describe how it

Looks

_____

_____

_____

Feels

_____

_____

_____

Smells

_____

_____

_____

Tastes

_____

_____

_____

Sounds When you Chew it

_____

_____

_____

_____

_____

_____

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FOOD TECHNOLOGIST ON THE GO

Now that you are a food technologist and an expert in evaluating food items, rate below how they taste, smell, feel, look, and hear.

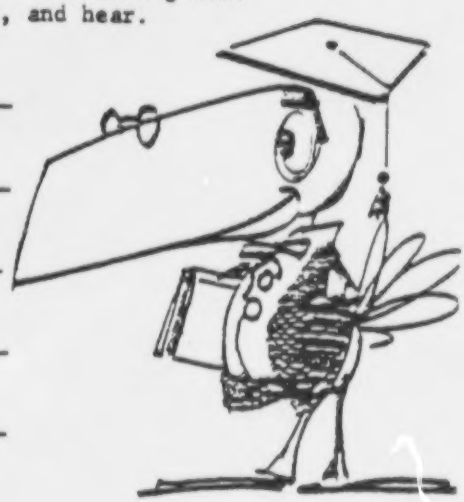
1. taste - _____

2. smell - _____

3. feel - _____

4. look - _____

5. hear - _____



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TEST YOUR SNIFFER

List by numbers what you smell.

1. _____

2. _____

3. _____

4. _____

5. _____

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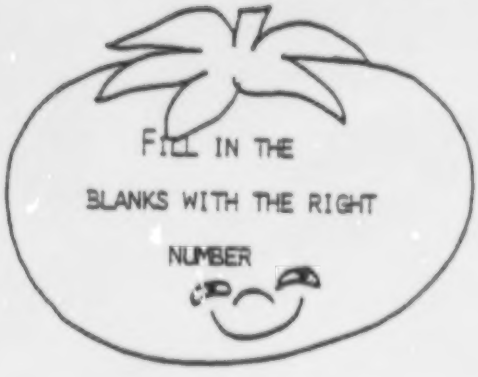
NAME_____

FOOD GAMES

FOOD GROUPS		SERVINGS
VEGETABLE-FRUIT GROUP	_____	A. 4
MILK GROUP	_____	B. 2
MEAT GROUP	_____	C. 3
BREAD-CEREAL GROUP	_____	D. 4



FOODS		FOOD GROUPS
EGGS	_____	1. VEGETABLE-FRUIT GROUP
ORANGES	_____	
ICE CREAM	_____	2. MILK GROUP
CEREAL	_____	3. MEAT GROUP
CHEESE	_____	4. BREAD-CEREAL GROUP
CORN	_____	
PEANUTS	_____	

FOODS		NUTRIENTS
MILK	_____	1. IRON
PEANUT BUTTER	_____	2. CALCIUM
CARROTS	_____	3. PROTEIN
EGGS	_____	4. CALORIES
CEREAL	_____	5. VITAMIN A
ORANGE	_____	6. VITAMIN B
LIVER	_____	7. VITAMIN C
SPINACH	_____	8. VITAMIN D
CANDY	_____	

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NUTRITION EDUCATION PROJECT

LESSON PLAN RATING FORM

Teacher: _____ Grade: _____

Lesson: _____ Date: _____

Instructions: Rate questions 1-6 on the scale ranging from "Strongly Disagree" to "Strongly Agree". For question 7 indicate the amount of revision you recommend by circling your choice. Lastly, give an indication of the revisions you feel are needed.	STRONGLY DISAGREE 1	SOMEWHAT DISAGREE 2	NEUTRAL 3	SOMEWHAT AGREE 4	STRONGLY AGREE 5
1. The lesson stimulates pupil interest.					
2. The lesson plan is grade appropriate.					
3. The lesson plan is educationally valuable.					
4. Overall, I would rate this lesson plan high.					
5. I was able to implement the lesson without excessive preparation time.					
6. I would use this lesson plan again.					

7. In my opinion, this lesson plan needs;

no revision | slight revision | moderate revision | substantial revision | total revision

8. Briefly, the revisions I would like to see are: _____

_____

_____

_____

_____

_____

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_____

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NUTRITION EDUCATION PROJECT

LESSON PLAN RATING FORM

Teacher: _____ Grade: _____

Lesson: _____ Date: _____

Instructions: Rate questions 1-6 on the scale ranging from "Strongly Disagree" to "Strongly Agree". For question 7 indicate the amount of revision you recommend by circling your choice. Lastly, give an indication of the revisions you feel are needed.	STRONGLY DISAGREE 1	SOMEWHAT DISAGREE 2	NEUTRAL 3	SOMEWHAT AGREE 4	STRONGLY AGREE 5
1. The lesson stimulates pupil interest.					
2. The lesson plan is grade appropriate.					
3. The lesson plan is educationally valuable.					
4. Overall, I would rate this lesson plan high.					
5. I was able to implement the lesson without excessive preparation time.					
6. I would use this lesson plan again.					

7. In my opinion, this lesson plan needs:

no revision | slight revision | moderate revision | substantial revision | total revision

8. Briefly, the revisions I would like to see are: _____

_____

_____

_____

_____

_____

_____

_____ 83

SAMPLE LESSON PLAN FORMAT AND SCOPE

Concept A

Kindergarten

Subject Area: Health

APPLES TO SAUCE

2

Behavioral Objective: The student will identify different forms in which the same food can be eaten; raw, cooked or as juice.

Process Objective: Comparing, willingness to try new experiences.

Vocabulary: Apple, applesauce, cook, raw.

Materials: Apples (1 for each 2 children)
Hot plate, covered saucepan, spoons,
small knives, paper cups
Applesauce recipe and ingredients
Flannelboard story attached.

Motivation: Hold up an apple - ask how we know it is an apple (see, feel, smell)
Ask "What can we do with it." (eat it).
"How many ways can we eat apples?"
(Raw, applesauce, pie, juice, jelly, etc.)

Development: Prepare applesauce as a class project. Let each child participate and taste. Have children compare raw apple with applesauce using senses of taste, sight, smell, feel. (Give each child a slice of raw apple and a small amount of applesauce in paper cup with spoon).

Evaluation: Have students tell you which they liked best; raw apples or applesauce.

Additional Activities:

1. Read the story, "Little Red House with No Doors and No Windows" to the children - (script attached).

2. Bring in additional foods and prepare in a different way-

   Possibilities: cream - butter, potatoes - mashed - Emphasize the many ways food can be changed by cutting, peeling, mashing, cooking and shaking.

Additional Resources:

Books: Rain Makes Applesauce by Scheur, J. and Belicka, M., Holiday House: New York, 1964.

Silly thought in words and pictures.

Ten Apples Up On Top by LeSieg, T., Random House, Inc. New York, 1961

Pickles Don't Grow on Trees by Morton, Louis, Random House
Shows food sources of children's favorite foods.
(Available from Project SNAC)

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NUTRITION EDUCATION PROJECT

TEACHER RESPONSIBILITIES

- To administer pre/post survey to students
- To participate in nutrition education inservice workshops (substitute teachers will be provided) and one-to-one participation
- To select, implement, record, and evaluate at least 2 nutrition activities per week during the 1980 school year (as described in the SNAC Curriculum Guide or as revised and adapted for classroom use according to teacher discretion)
- To provide at least one food related classroom activity per month during the school year
- To encourage parent participation in nutrition education activities
- To assist nutrition education project coordinator with overall program implementation (e.g., timely distribution of newsletters and handouts for parent information, willingness to contribute suggestions for program improvements, etc.)

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EVALUATION AND TESTING

3

Lesson 3 contains the following handouts to be used with Lesson 3 of the Staff In-Service Guide.

		Page(s)
1.	"Lunch Bunch"	43 - 44
2.	"Newsletter"	45 - 46
3.	Copies of the California State Department of Education Student Test (1979-80)	47 - 92
	Kindergarten	47 - 64
	Grade One	65 - 72
	Grades Two and Three	73 - 83
	Grades Four - Six	84 - 92

Lunch Bunchers

(date the study will be on)

School's Lunch Area

Dear Teachers and Aides,

A two day plate waste study entitled the "Lunch Bunch Study" will be done in the lunch area on designated date.

You can help the study run smoothly if you will do the following:

1. Read the "Lunch Bunchers" sheet to your entire class on the day before and review daily if needed.

2. Each day of the study, distribute color-coded name tags to each student who eats the school lunch. (designated date of study).

3. Tell the children to leave their trays and milk cartons on the Lunch Bunch table which will be clearly marked.

4. Remind the children that for these two days they should not throw any part of their lunch or their trays away. They are also asked not to trade food on these days.

5. There will be no reports to the teachers about left-overs so children need not fear that they will "get in trouble" for not finishing the whole meal.

Lunch Bunchers

IF YOU EAT THE SCHOOL LUNCH ON A DESIGNATED DAY, YOU WILL BE PART OF THE "SCHOOL'S LUNCH BUNCH".

ALL "LUNCH BUNCH KIDS" WILL BE HELPING THE CAFETERIA WITH A STUDY TO FIND OUT WHAT KIDS ARE EATING.

HERE IS WHAT LUNCH BUNCHERS DO:

1. PLAN TO EAT THE SCHOOL LUNCH ON A DESIGNATED DAY.
2. WEAR YOUR NAME TAG TO THE LUNCH AREA.
3. EAT YOUR LUNCH THE SAME AS USUAL.
4. STACK YOUR TRAYS AND MILK CARTON NEATLY AND PUT YOUR NAME TAG ON THE TRAY.
5. TAKE YOUR TRAYS AND MILK CARTON WITH ALL THE LEFTOVERS TO THE LUNCH BUNCH TABLE.

Swing Into Nutrition

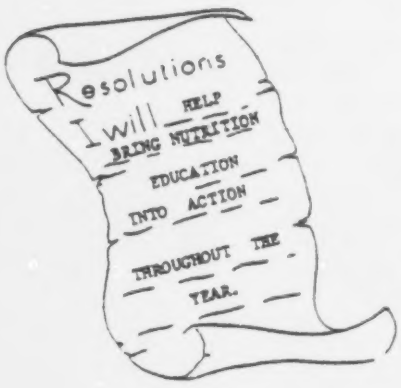
NUTRITION IN ACTION!

JANUARY 1980

This is the fourth year for this special State and federally-funded research project in the San Mateo City School District. The goals of this project are (1) to improve and develop healthful food habits by children; (2) to integrate students' awareness of nutrition in their classroom activities and school food service program.

In the San Mateo City School District there are approximately 650 students in 17 classrooms involved in this special program. The nutrition education activities emphasize the 5 following concepts daily: (1) awareness and feelings about food and their food habits, (2) nutrient content of food and new foods, (3) process of body growth and development, (4) awareness of different foods through their social and cultural background, (5) food handling, preparation, and safety.

This program needs strong parent involvement. Parents can help this program by becoming more nutrition conscious with their families. Here's how you can be involved:



1. Read the nutrition newsletter Swing Into Nutrition!
2. Attend Nutrition Education Parent meetings held at school.
3. Assist your child's teacher with the special nutrition related activities (tasting parties, cooking projects, field trips, etc.).
4. Reinforce classroom activities by using materials your child brings home. Send letters supporting this program, about your feelings of what nutrition education has done for your family, to your child's teacher or your school nutritionist, Deborah Barley.

5. Read the labels of the foods you select to be sure of their nutritional content for your family.

6. Call or write your school nutritionist, Deborah Barley, 347-9111 Ext. 255, for more program details or any questions you might have.

NUTRITION EDUCATION STARTS AT HOME WITH YOU!

Calcium In Milk Is Needed By You!

The body's need for calcium occurs throughout life, but especially during childhood, pregnancy and lactation. It is the mineral that is frequently found to be low in our diets. The major function of calcium is to build and maintain bones and teeth. Calcium also helps in the process of bloodclotting, in normal nerve transmission and regulation of the heartbeat.

As adults, we do need calcium and the food products in the Milk Group. For the average male or female adult between the ages of 19 - 51+, you need 800 milligrams of calcium each day. That is about 22 ounces of milk (whole, low, or non-fat milk). Twenty-two ounces of milk is about 2-3/4 cups of milk, or about five ounces of cheddar or Swiss cheese. Other food sources are cottage cheese, dark green leafy vegetables, sardines, clams, and oysters.

Women need to remember that during pregnancy or lactation they need to increase their calcium from 800 milligrams to 1,200 milligrams. Therefore, instead of 22 ounces of milk, they need 33 ounces of milk or about four 8 ounce glasses of milk.

When you, as an adult, do not consume this amount, you may develop osteoporosis. Osteoporosis is a metabolic disorder which may be defined as a reduction in the amount of bone without any changes in its chemical composition.

Can you find these foods high in calcuim?

Cheese
Custard
Ice Cream
Buttermilk
Yogurt
Milk
Leafy Greens

I	T	P	R	O	S	A	W
C	H	E	E	S	E	X	B
E	A	S	T	R	S	O	U
C	T	Y	O	G	U	R	T
R	T	X	M	R	C	Y	T
E	E	V	A	E	A	Z	E
A	N	T	B	E	N	Q	R
M	I	L	K	N	D	U	M
Q	P	Z	V	S	E	P	I
C	U	S	T	A	R	D	L-
R	A	N	W	O	D	V	K

Osteoporosis occurs in persons after age fifty and especially in women after the menopause.

Low levels of calcium in the blood may increase the irritability of nerve fibers and nerve centers which results in muscle spasms such as leg cramps. So, as you can see, it is just as important for adults to have calcium in their diet as it is for children.

NUTRITION EDUCATION ASSESSMENT

Answer Sheet

NUTRITION KNOWLEDGE TEST

Preschool Age/Kindergarten

Child's Last Name:_____(1-15)

Child's Number on Roll Sheet: _____(16-17)

Age: _____ (18)

Sex: Male (1) ____

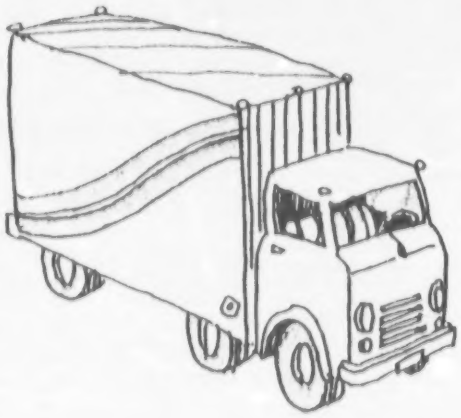
Female (2) ____ (19)

Number of Previous Years in NETP:_____(20)

Circle the letter of the answer the child chooses for each question.

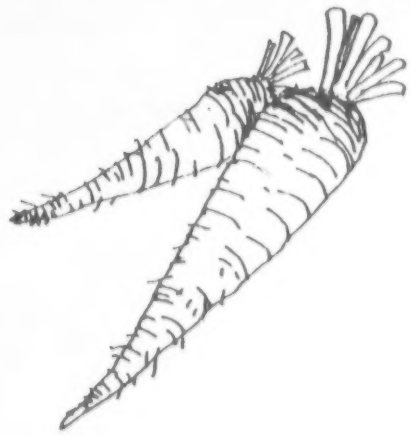
	(1)	(2)	(3)			(1)	(2)	(3)	
1.	A	B	C	(21)	9.	A	B	C	(29)
2.	A	B	C	(22)	10.	A	B	C	(30)
3.	A	B	C	(23)	11.	A	B	C	(31)
4.	A	B	C	(24)	12.	A	B	C	(32)
5.	A	B	C	(25)	13.	A	B	C	(33)
6.	A	B	C	(26)	14.	A	B	C	(34)
7.	A	B	C	(27)	15.	A	B	C	(35)
8.	A	B	C	(28)	16.	A	B	C	(36)

Sample: What is a food that people eat?



a. Truck

b. School



c. Carrots

-48-
San Mateo City Schools, CA Dept. of Ed.

1. Who takes the food from the farm to the store?

a. The truck driver

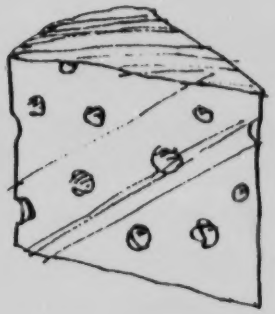
b. The storekeeper

c. The farmer

-49-
San Mateo City Schools, CA Dept. of Ed.

2. What food comes from a plant?

a. Carrots



b. Cheese

c. Chicken

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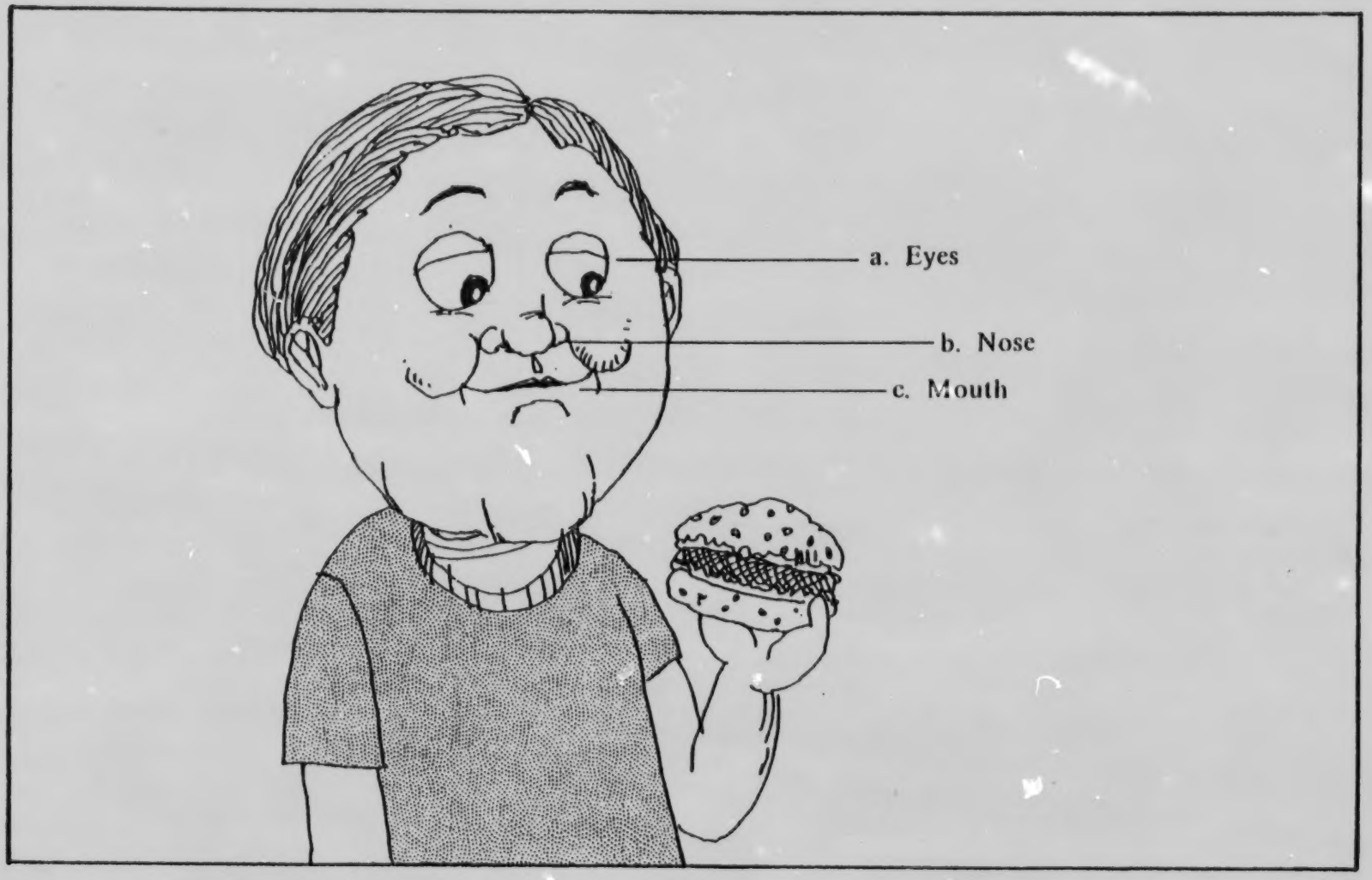
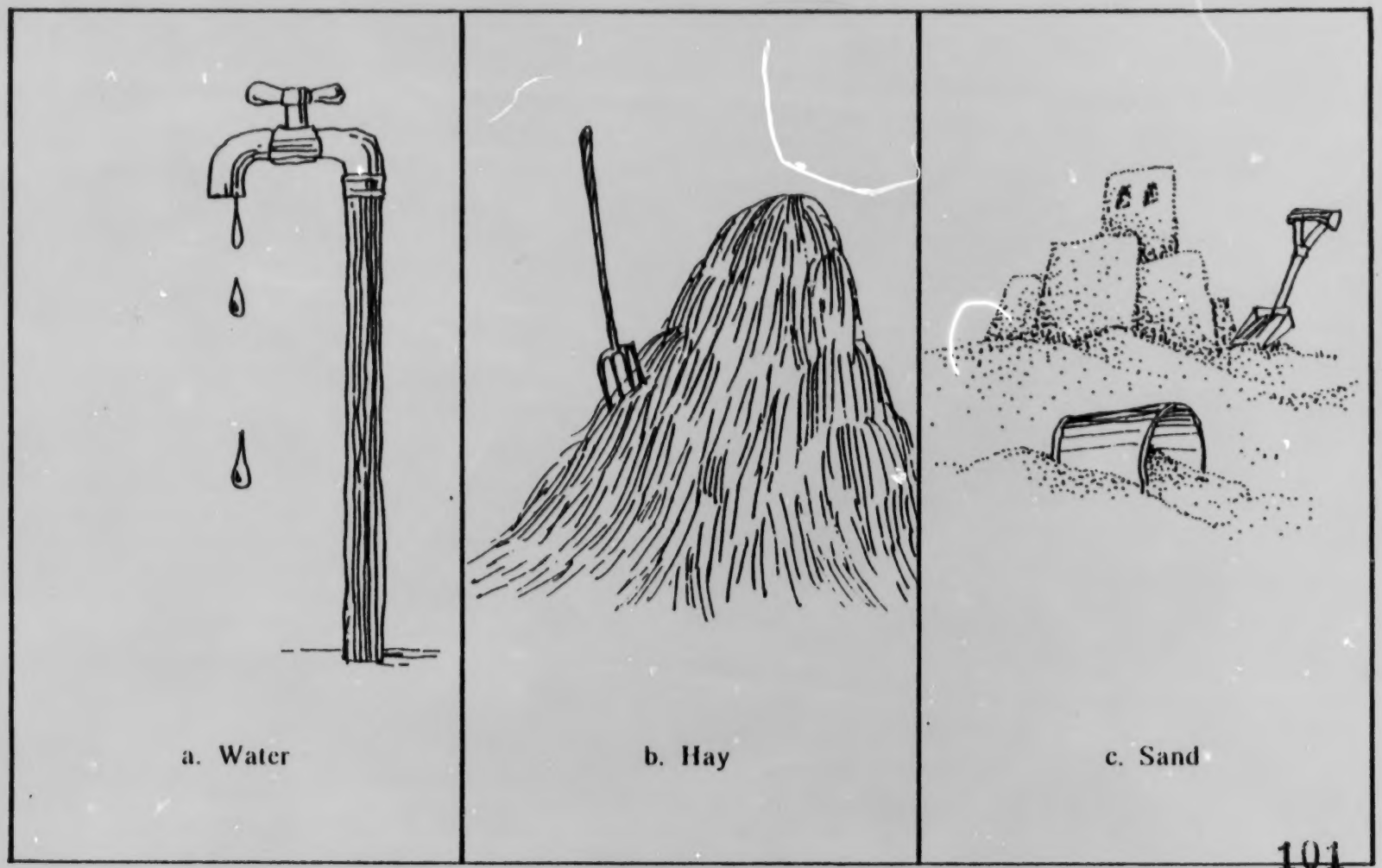
3. What helps you smell food?



San Mateo City Schools, CA Dept. of Ed.

4. What do plants need to grow?



a. Water

b. Hay

c. Sand

-52-
San Mateo City Schools, CA Dept. of Ed.

5. Who grows our food?

a. The owner of the grocery store

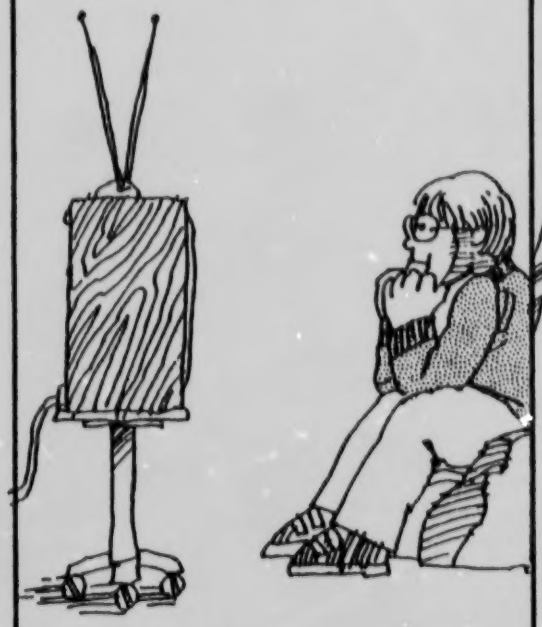
b. The baker

c. The farmer

-53-
San Mateo City Schools, CA Dept. of Ed.

6. What does a television commercial want you to do?

a. Buy something.



b. Watch television.

c. Play on the swing.

-54-
San Mateo City Schools, CA Dept. of Ed.

7. What food comes from an animal

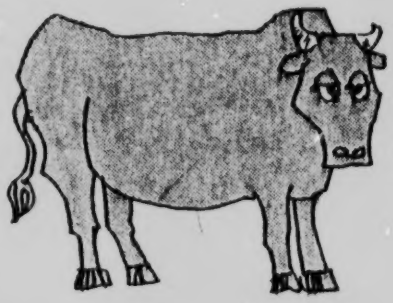
a. Cabbage

animal?

b. Strawberry

c. Milk

8. What will grow if you plant a seed in dirt and give it water?



a. Cow

b. Rocks

c. Plant

-56-
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9. What should you eat to stay healthy?

a. Many different foods

b. Only your favorite foods

c. Only bananas

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10. Why do television commercials show you pictures of food?

a. So you will buy it

b. So you will know how the food grows

c. So you will be healthy

-56-
San Mateo City Schools, CA Dept. of Ed.

11. Why do you need food?

a. To grow

b. To feel full

c. To go to sleep

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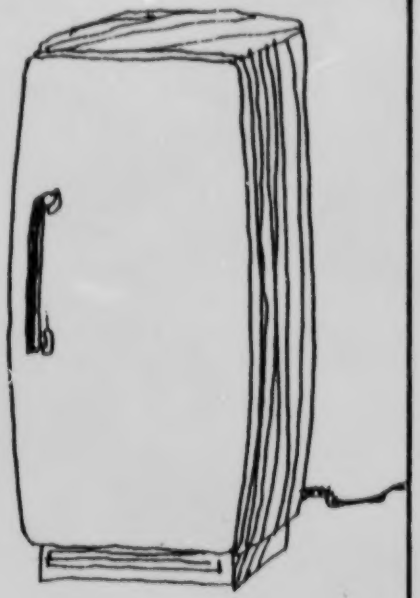
12. Where should you put milk to keep it fresh?

a. On the table

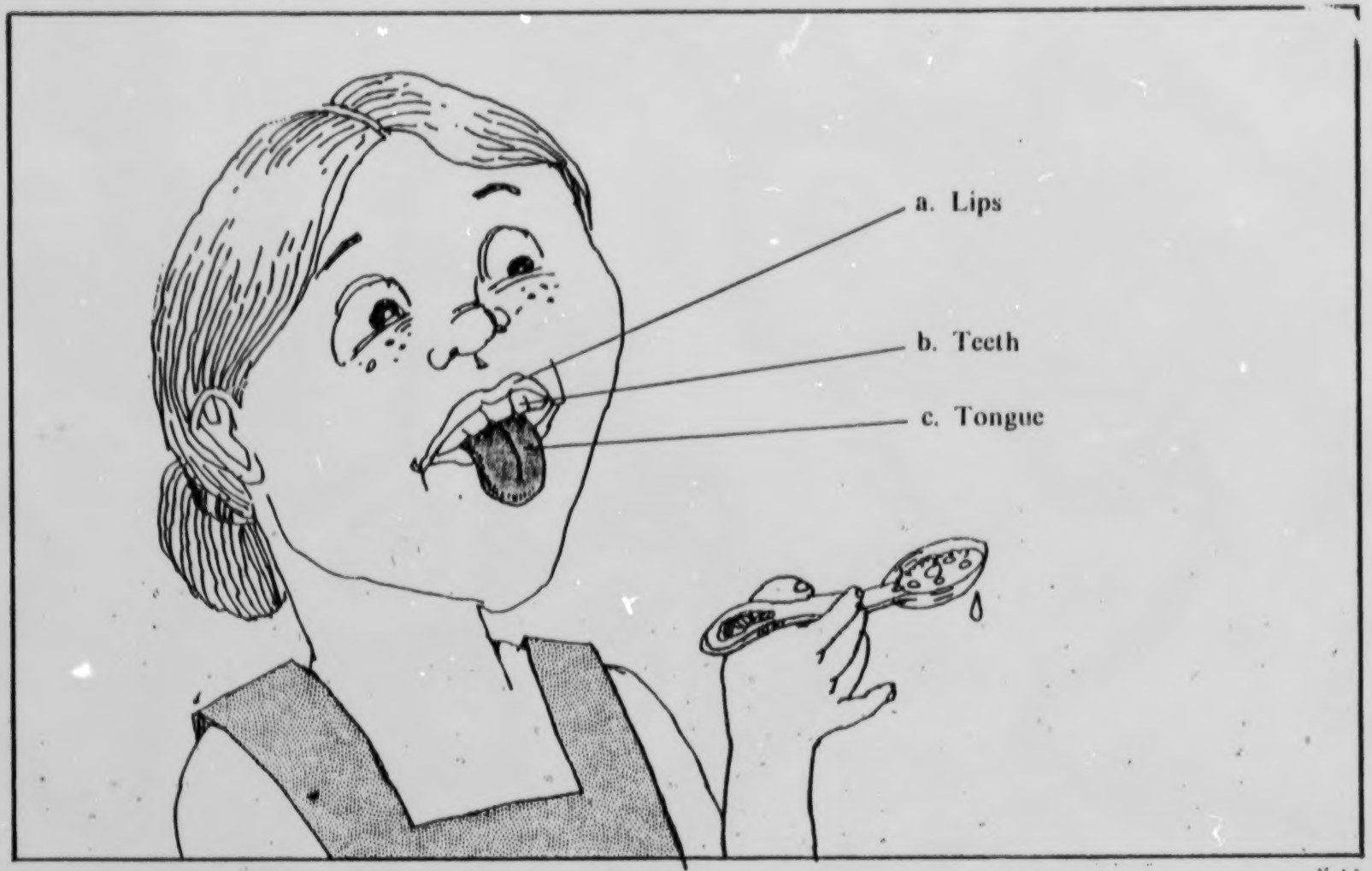
b. In the cupboard



c. In the refrigerator

-60-
San Mateo City Schools, CA Dept. of Ed.

13. What do you taste your food with?



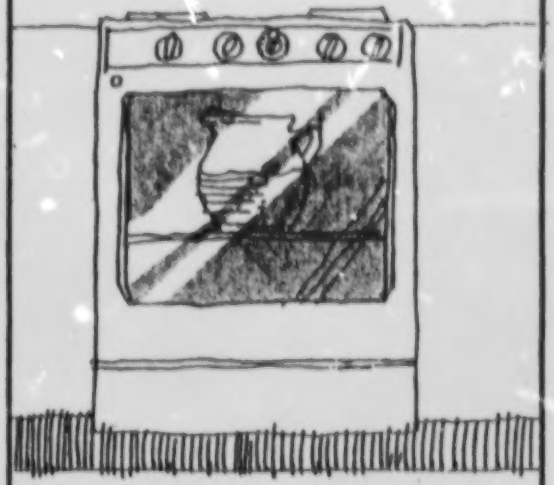
K-13

-61-
San Mateo City Schools, CA Dept. of Ed.

14. Where should you put orange juice to keep it fresh?

a. In the cupboard

b. In the refrigerator



c. In the oven

K-14

15. Which is a farm animal we eat?

a. Bear

b. Lion

c. Pig

K-15

-63
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16. Why does your body need fruits and vegetables?

a. So you will get fat

b. So you can sleep

c. So you will stay healthy

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Record 2

NUTRITION EDUCATION ASSESSMENT

Part I

NUTRITION KNOWLEDGE TEST

Grade One

Child's Last Name: ☐☐☐☐☐☐☐☐☐☐☐☐ (5-15)

Child's Number on Roll Sheet: ☐☐ (16-17)

Grade: ☐ (18)

Sex: Male ☐ (19)
Female ☐

Number of Previous Years in NEEP: ☐ (20)

Test Version: (check one) English ☐ (1) Spanish ☐ (4) Chinese ☐ (3) (21)

Directions

Listen to each question and its answers when your teacher reads it aloud. Find the square that shows the best answer to the question and draw a big "X" on the square that shows your answer. Be sure the "X" you draw goes across the whole square, but stays inside the box.

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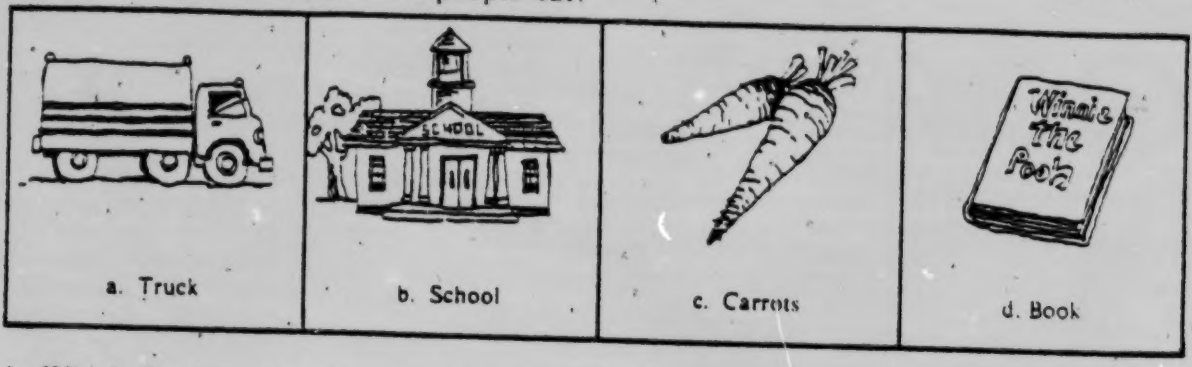
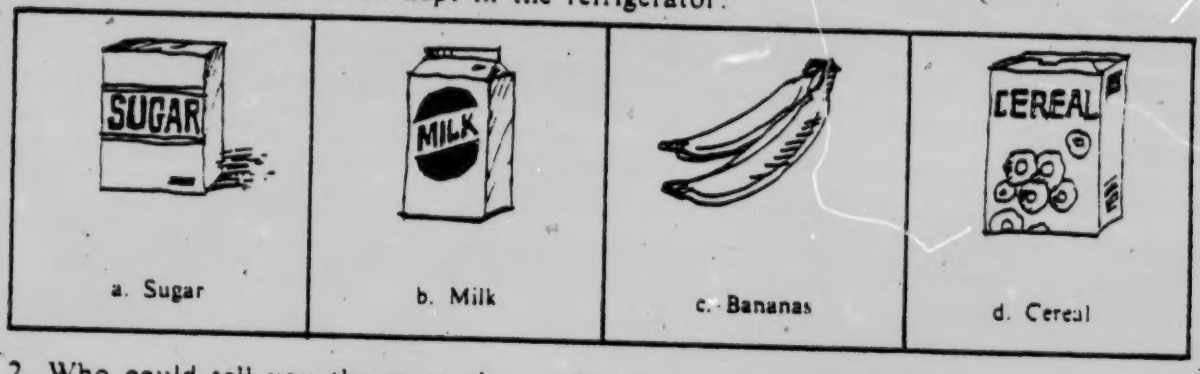
BEST COPY AVAILABLE

Sample: What is a food that people eat?



a. Truck b. School c. Carrots d. Book

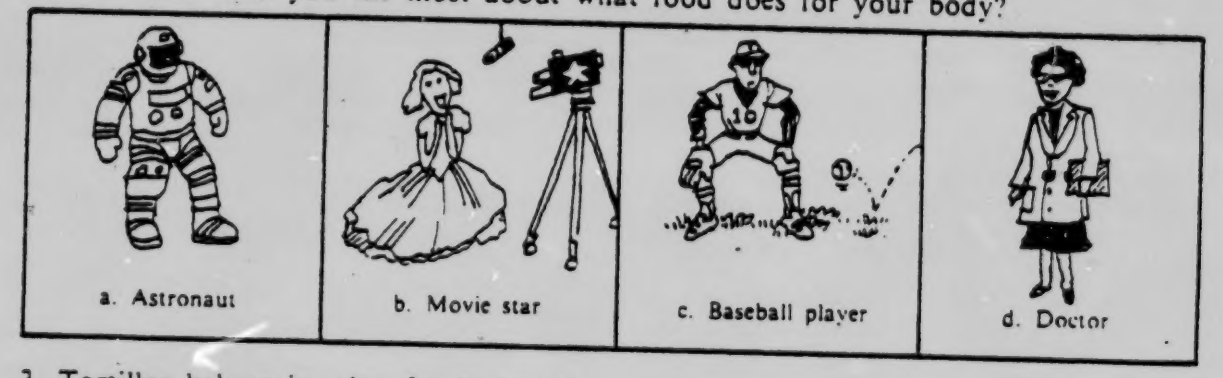
1. Which food needs to be kept in the refrigerator?



a. Sugar b. Milk c. Bananas d. Cereal

(22)

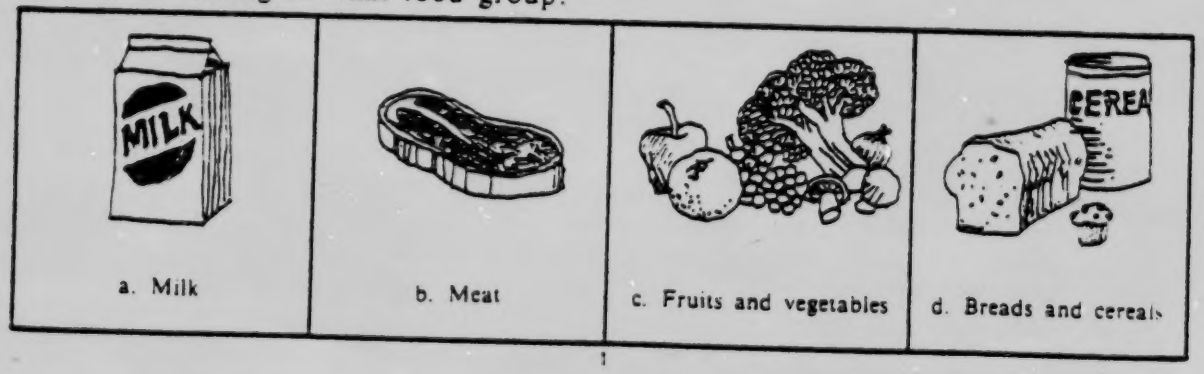
2. Who could tell you the most about what food does for your body?



a. Astronaut b. Movie star c. Baseball player d. Doctor

(23)

3. Tortillas belong in what food group?



a. Milk b. Meat c. Fruits and vegetables d. Breads and cereals

(24)

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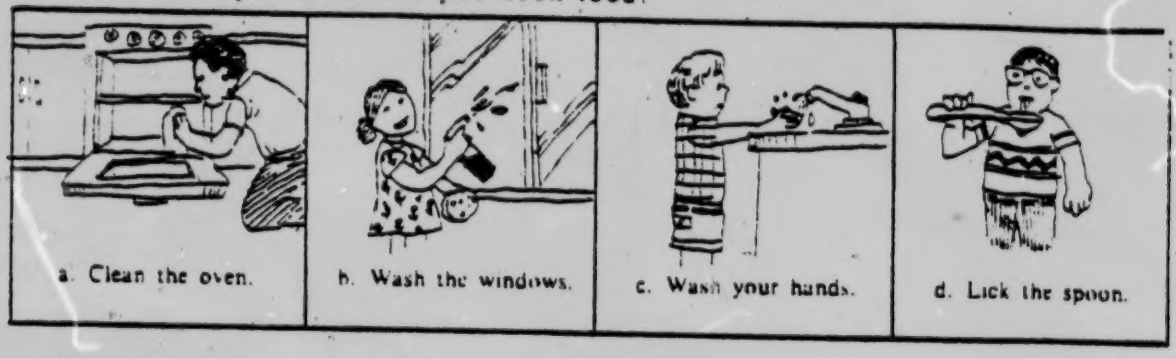
4. What should you do before you cook food?

(25)



a. Clean the oven. b. Wash the windows. c. Wash your hands. d. Lick the spoon.

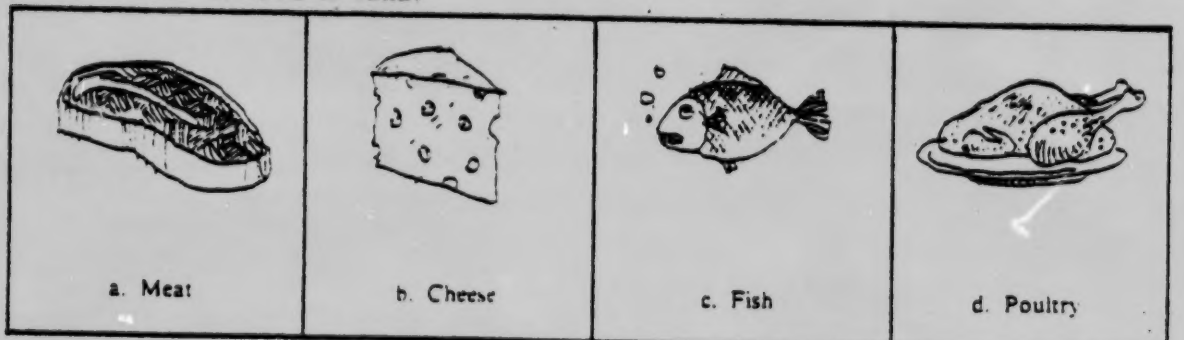
5. What does a baker do?

(26)

a. Makes bread and rolls b. Serves food in a restaurant c. Grows food on a farm d. Delivers food to the store

6. What kind of food is tuna?

(27)



a. Meat b. Cheese c. Fish d. Poultry

7. What should you do when a new food is served to you for lunch?

(28)

a. Throw it away. b. Taste two bites. c. Give it to your friend. d. Save it for later.

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8. If you met people who lived in another country, what would they eat?

a.	b.	c.	d.
The same foods that you eat	Foods different from those you eat	Foods that are not good for anybody to eat	Foods that grow only in America

(29

9. What kind of food is cauliflower?

a. Fruit	b. Vegetable	c. Grain	d. Seed

(30

10. Your Type A school lunch has meat, one fruit, one vegetable, and one slice of bread. What is missing?

a. A dessert	b. One more vegetable	c. One more slice of bread	d. A cup of milk

(3

11. How many servings from the bread and cereal group should you eat each day?

a.	b.	c.	d.
5	4	2	3

(

3

San Mateo City Schools, CA Dept. of Ed.

12. Which food belongs in the meat group?

(33)

a. Corn

b. Pancakes

c. Gravy

d. Nuts

13. When does your body need more food?

(34)

a. When you sleep

b. When you run

c. When you watch TV

d. When you read

14. What should you do when you eat in the school lunchroom?

(35)

a. Eat only your favorite foods.

b. Use good manners.

c. Be as noisy as possible.

d. Eat your dessert first.

15. What food is best to have at parties?

(36)

a. Candy bars

b. Bubble gum

c. Fresh fruit

d. Soda pop

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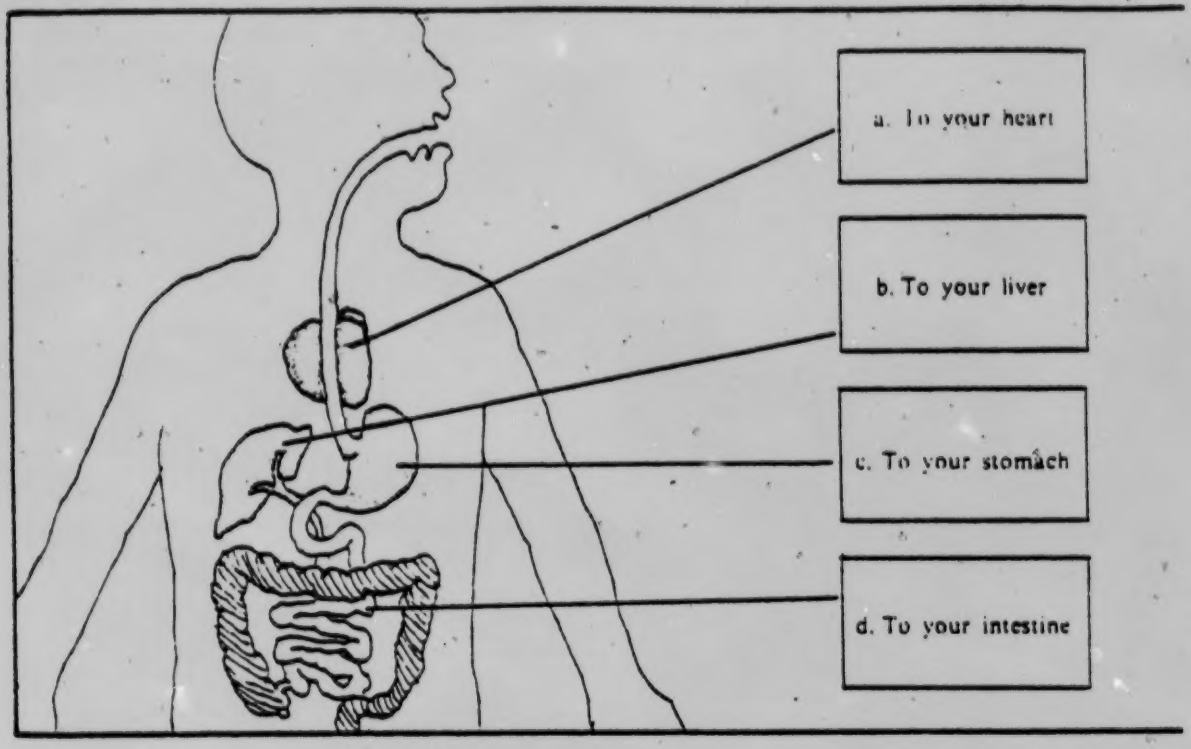
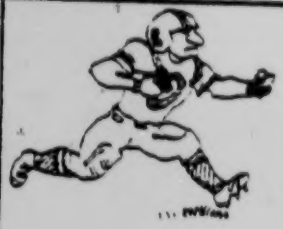
16. After chewing food in your mouth where does it go next?



17. What is the main ingredient in this box of pancake mix?

18. Which person tells us about foods for healthy teeth?

(39)



a. Football player

b. Dentist

c. Farmer

d. Baker

19. How many servings should you eat each day from the fruit and vegetable group?

40)

5	4	2	3
a.	b.	c.	d.

20. How do cereal companies try to get you to buy their cereal?

41)

a. They put free gifts in the box.

b. They tell you how much the cereal costs.

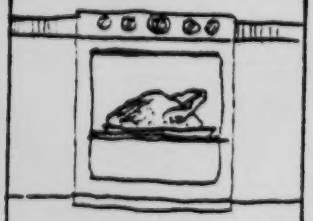
c. They tell you bad things about the cereal.

d. They tell you what the cereal is made of.

21. What is one way to cook food?

42)

a. Mash it.



b. Bake it.

c. Peel it.

d. Chop it.

San Mateo City Schools, CA Dept. of Ed.

22. What can happen to you if you eat more food than your body needs?

a. Become thirsty.

b. Become overweight.

c. Become underweight.

d. Become hungry.

(43)

23. Which food will help keep your teeth healthy?

a. Milk

b. Sugar

c. Chocolate candy

d. Honey

(44)

24. What should the lunchroom be like when you eat?

Busy	Clean	New	Crowded
a.	b.	c.	d.

(45)

San Mateo City Schools, CA Dept. of Ed.

Record 2

NUTRITION EDUCATION ASSESSMENT

Part I

NUTRITION ATTITUDE QUESTIONNAIRE

Grades Two and Three

Child's Last Name: ☐☐☐☐☐☐☐☐☐☐☐☐ (5-15)

Child's Number on Roll Sheet: ☐☐ (16-17)

Grade: ☐ (18)

Sex: Male ☐
Female ☐ (19)

Number of Previous Years in NEIP: ☐ (20)

Test Version: English ☐ (1) Spanish ☐ (2) Chinese ☐ (3) (21)
(check one)

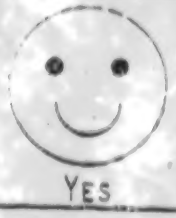
Directions

Read each sentence silently while your teacher reads it aloud. After you read the sentence, look at the faces next to the sentence. If you do or like what the sentence says, draw a big "X" on the happy face. If you do not do or do not like what the sentence says, draw a big "X" on the sad face. Be sure the "X" you draw goes across the whole face, but stays inside the box. There are no right or wrong answers for these sentences. Be honest and tell how you really feel.

PRACTICE QUESTION

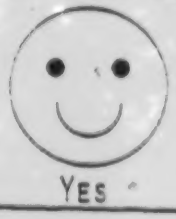
SWIMMING IS MORE FUN THAN READING.

1. I LIKE THE SAME FOODS THAT MY FRIENDS LIKE.



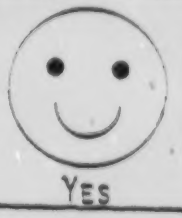
(22)

2. I ALWAYS EAT WHAT MY FAMILY TELLS ME TO EAT.



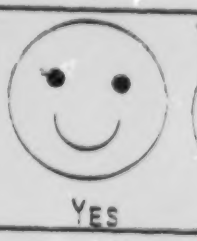
(23)

3. I LIKE TO EAT ONLY FOODS THAT ARE GOOD FOR ME.



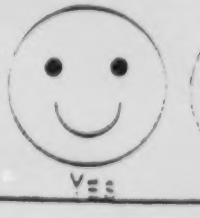
(24)

4. ALL FOODS I SEE ON T V ARE GOOD FOR ME.



(25

5. I LIKE TO TRY NEW FOODS I HAVEN'T TASTED BEFORE.



(26

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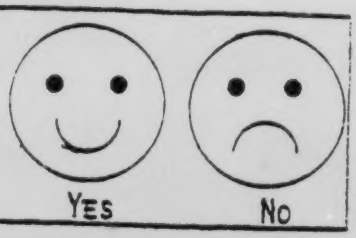
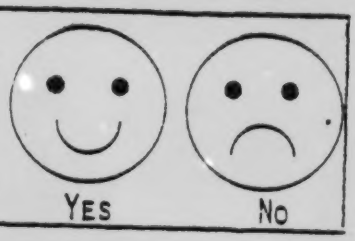
6. I WILL EAT SOME FOODS MY FRIENDS DON'T LIKE.



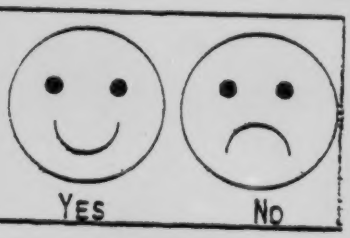
(27)

7. I WILL EAT CANDY EVEN IF SOMEONE IN MY FAMILY SAYS I SHOULDN'T EAT CANDY.



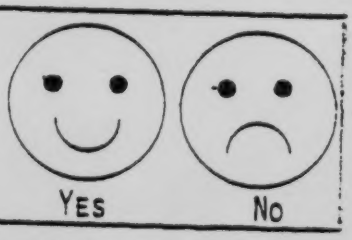
(28)

8. IF I FEEL GOOD, I CAN EAT ANY FOOD I WANT TO EAT.



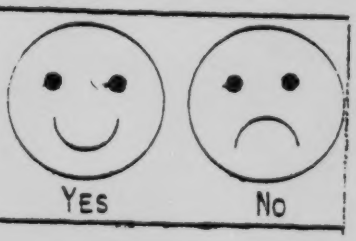
(29)

9. FOODS IN PRETTY PACKAGES ALWAYS TASTE GOOD TO ME.



(30)

10. I EAT ONLY FOODS THAT TASTE GOOD TO ME.



(31)

San Mateo City Schools, CA Dept. of Ed.

NUTRITION EDUCATION ASSESSMENT

PART II

NUTRITION KNOWLEDGE TEST

GRADES TWO AND THREE

CHILD'S NAME: _____

DIRECTIONS

READ EACH QUESTION SILENTLY WHILE YOUR TEACHER READS IT ALOUD. AFTER YOU READ A QUESTION, YOUR TEACHER WILL READ ALOUD FOUR POSSIBLE ANSWERS. CHOOSE THE BEST ANSWER FOR EACH QUESTION AND DRAW A BIG "X" ON THE BOX THAT SHOWS YOUR ANSWER.

San Mateo City Schools, CA Dept. of Ed.

Sample: What is a food that people eat?

a. Truck

b. School

c. Carrots

d. Book

1. Which food needs to be kept in the refrigerator?

a. Sugar

b. Milk

c. Bananas

d. Cereal

(32)

2. Who could tell you the most about what food does for your body?

a. Astronaut

b. Movie star

c. Baseball player

d. Doctor

(33)

3. Tortillas belong in what food group?

a. Milk

b. Meat

c. Fruits and vegetables

d. Breads and cereals

(34)

San Mateo City Schools, CA Dept. of Ed.

4. What should you do before you cook food?

(35)

a. Clean the oven.

b. Wash the windows.

c. Wash your hands.

d. Lick the spoon.

5. What does a baker do?

(36)

a. Makes bread and rolls

b. Serves food in a restaurant

c. Grows food on a farm

d. Delivers food to the store

6. What kind of food is tuna?

(37)

a. Meat

b. Cheese

c. Fish

d. Poultry

7. What should you do when a new food is served to you for lunch?

(38)

a. Throw it away.

b. Taste two bites.

c. Give it to your friend.

d. Save it for later.

San Mateo City Schools, CA Dept. of Ed.

8. If you met people who lived in another country, what would they eat?

The same foods that you eat	Foods different from those you eat	Foods that are not good for anybody to eat	Foods that grow only in America
a.	b.	c.	d.

(39)

9. What kind of food is cauliflower?

a. Fruit	b. Vegetable	c. Grain	d. Seed

(40)

10. Your Type A school lunch has meat, one fruit, one vegetable, and one slice of bread. What is missing?

a. A dessert	b. One more vegetable	c. One more slice of bread	d. A cup of milk

(41)

11. How many servings from the bread and cereal group should you eat each day?

5	4	2	3
a	b	c.	d

(42)

12. Which food belongs in the meat group?

a. Corn

b. Pancakes

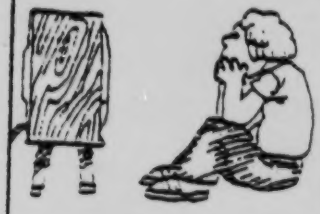
c. Gravy

d. Nuts

13. When does your body need more food?

a. When you sleep

b. When you run



c. When you watch TV

d. When you read

14. What should you do when you eat in the school lunchroom?

a. Eat only your favorite foods.

b. Use good manners.

c. Be as noisy as possible.

d. Eat your dessert first.

15. What food is best to have at parties?

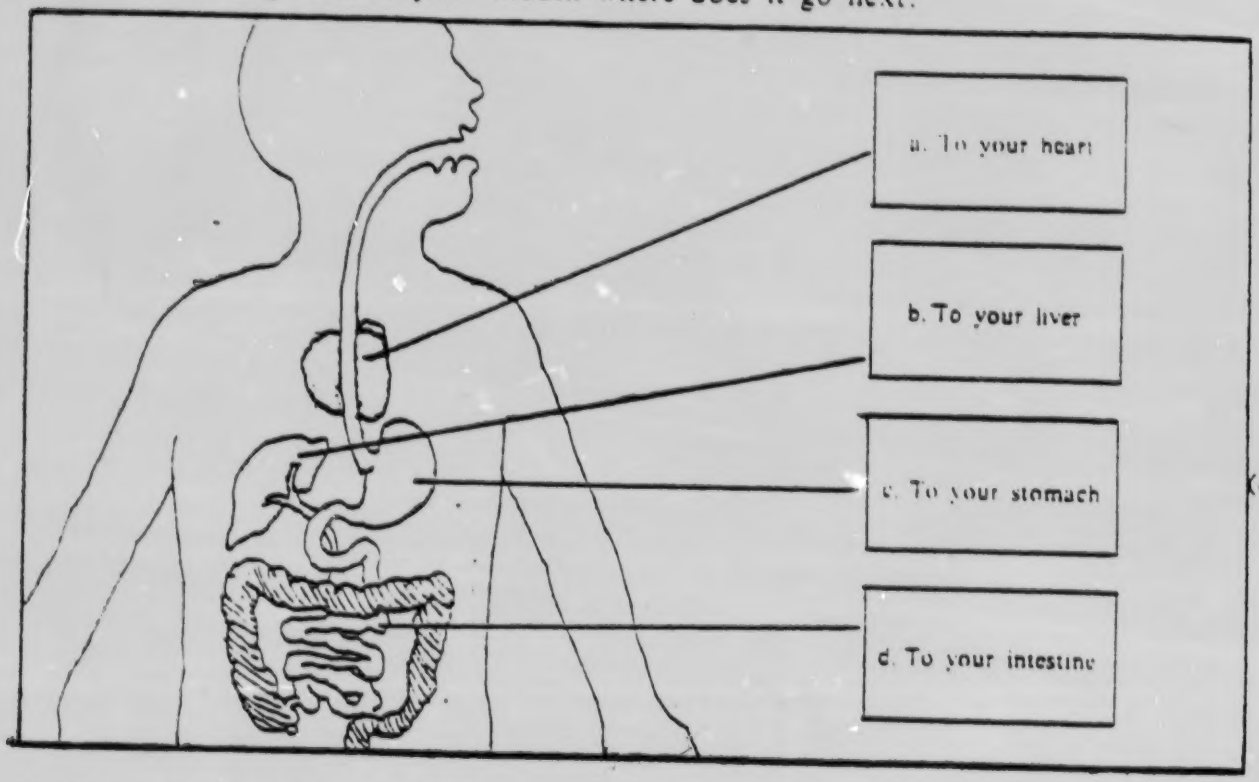
a. Candy bars

b. Bubble gum

c. Fresh fruit

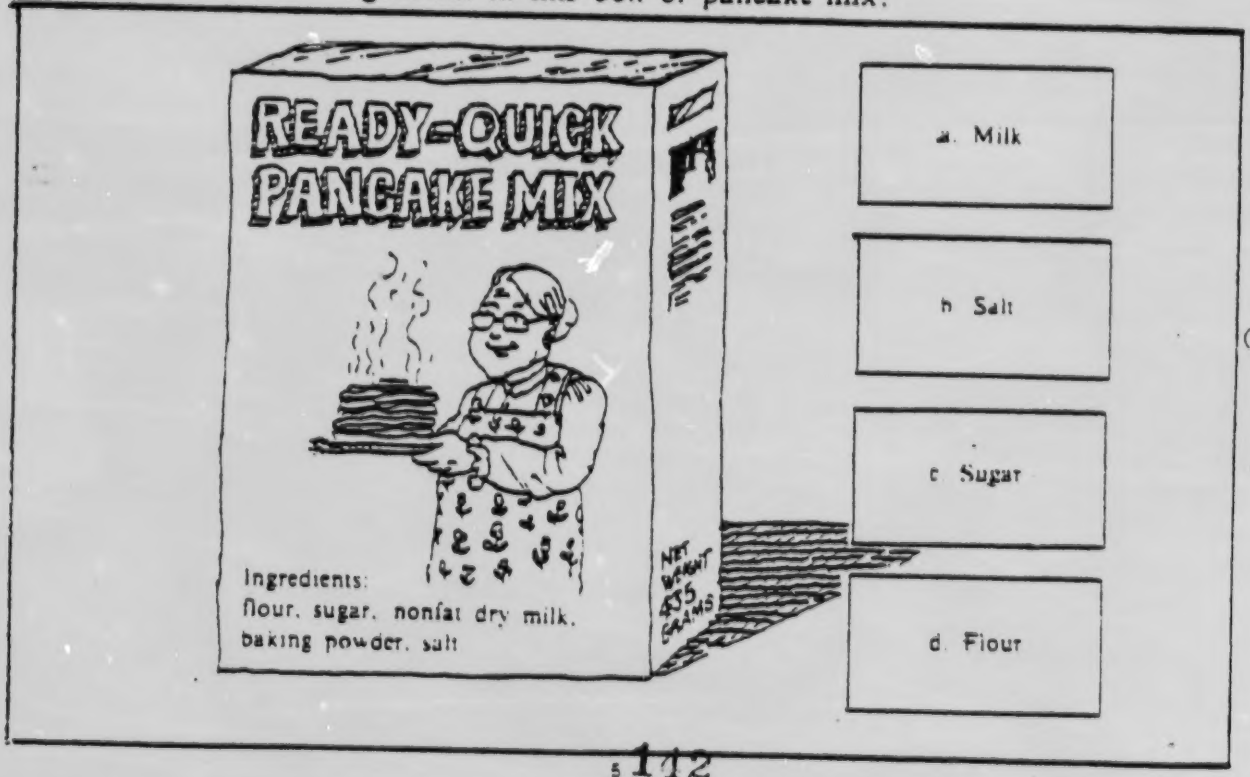
d. Soda pop

16. After chewing food in your mouth where does it go next?



(47

17. What is the main ingredient in this box of pancake mix?



(48

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18. Which person tells us about foods for healthy teeth?

(49)

a. Football player

b. Dentist

c. Farmer

d. Baker

19. How many servings should you eat each day from the fruit and vegetable group?

(50)

5	4	2	3
a.	b.	c.	d.

20. How do cereal companies try to get you to buy their cereal?

(51)

a. They put free gifts in the box.

b. They tell you how much the cereal costs.

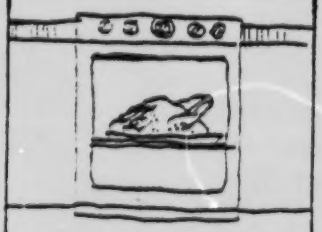
c. They tell you bad things about the cereal.

d. They tell you what the cereal is made of.

21. What is one way to cook food?

(52)

a. Mash it.



b. Bake it.

c. Peel it.

d. Chop it.

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22. What can happen to you if you eat more food than your body needs?

a. Become thirsty.

b. Become overweight.

c. Become underweight.

d. Become hungry

(53

23. Which food will help keep your teeth healthy?

a. Milk

b. Sugar

c. Chocolate candy

d. Honey

(54

24. What should the lunchroom be like when you eat?

Busy	Clean	New	Crowded
a.	b.	c.	d

(5:

NUTRITION EDUCATION ASSESSMENT

Part I

NUTRITION ATTITUDE QUESTIONNAIRE

Grades Four Through Six

Child's Last Name: _____(1-15)

Child's Number on Call Sheet: _____(16-17)

Grade: _____ (18)

Sex: Male (1) _____ (19)

Female (2) _____

Number of Previous Years in NETP:_____(20)

Directions

Read each sentence carefully. If you agree with the sentence or somewhat agree with it, put an "X" in the box marked "agree." If you do not agree with the sentence or somewhat disagree with it, put an "X" in the box marked "disagree."

SAMPLE:

I think all people should learn to swim.

/___/agree /___/disagree

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1. I would not buy candy because the dentist will scold me for eating sweets. ☐ Agree ☐ Disagree (21)

2. I would eat food I like even if my friends are teasing me. ☐ Agree ☐ Disagree (22)

3. I would buy only foods that taste good. ☐ Agree ☐ Disagree (23)

4. I am old enough to make my own food choices, so my parents should not tell me what to do. ☐ Agree ☐ Disagree (24)

5. I would spend money for food without thinking how much the food costs. ☐ Agree ☐ Disagree (25)

6. I will not eat any food that might ha[illegible] my body. ☐ Agree ☐ Disagree (26)

7. I will trade food in my lunch so my friends will like me. ☐ Agree ☐ Disagree (27)

8. I often change my favorite food. ☐ Agree ☐ Disagree (28)

9. I would not trade food in my lunch if someone in my family said I shouldn't. ☐ Agree ☐ Disagree (29)

10. When I go to the store, I buy my favorite food even if it costs a lot of money. ☐ Agree ☐ Disagree (30)

11. I think it is important not to get too fat. ☐ Agree ☐ Disagree (31)

12. I would trade food at lunch if my friends were trading food. ☐ Agree ☐ Disagree (32)

13. I enjoy eating even when I am alone. ☐ Agree ☐ Disagree (33)

14. I listen to my family when they tell me what to eat. ☐ Agree ☐ Disagree (34)

15. I would skip my lunch to save money for something special after school. ☐ Agree ☐ Disagree (35)

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NUTRITION EDUCATION ASSESSMENT

Part II

NUTRITION KNOWLEDGE TEST

Grades Four Through Six

Child's Last Name: _____(1-15)

Child's Number on Roll Sheet: _____(16-17)

Grade: _____ (18)

Sex: Male (1) _____

Female (2) _____ (19)

Number of Previous Years in NETP:_____(20)

Directions

There are many questions about nutrition and food choices in this part of the Nutrition Education Assessment. Read each question carefully and choose the best answer. Circle the letter of the answer you have chosen for each question.

(37) 1. WHY DOES THE TYPE A SCHOOL LUNCH CONTRIBUTE TO GOOD NUTRITION?

A. IT IS COOKED IN THE SCHOOL CAFETERIA

B. IT ALWAYS HAS MILK

C. IT PROVIDES ONE-THIRD OF YOUR DAILY NUTRIENT NEEDS

D. IT DOES NOT HAVE CALORIES

(38) 2. WHICH OF THE FOLLOWING IS A NUTRIENT?

A. OXYGEN

B. MEAT

C. WATER

D. MILK

(39) 3. WHAT FOOD HAS THE MOST PROTEIN?

A. MUSHROOMS

B. SOYBEANS

C. FRENCH FRIES

D. APPLE JUICE

(40) 4. WHICH DOES <u>NOT</u> INFLUENCE HOW MUCH FOOD YOU NEED?

A. HOW BIG YOU ARE

B. HOW SMART YOU ARE

C. HOW ACTIVE YOU ARE

D. HOW OLD YOU ARE

(41) 5. WHERE DOES FOOD GO AFTER IT IS IN YOUR STOMACH?

A. SMALL INTESTINE

B. ESOPHAGUS

C. LARGE INTESTINE

D. LIVER

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6. WHAT IS THE MAIN NUTRIENT YOU GET FROM FOODS IN THE BREAD GROUP?

   A. CARBOHYDRATE

   B. FAT

   C. WATER

   D. PROTEIN

7. WHAT FOOD COULD BE ADDED TO BAKED FISH, RICE, AND MILK TO IMPROVE THE LOOKS OF THE MEAL?

   A. MASHED POTATOES

   B. CAULIFLOWER

   C. GREEN BEANS

   D. APPLESAUCE

8. WHICH HAS THE LEAST EFFECT ON THE AMOUNT OF FOOD PRODUCED BY A FARMER?

   A. WEATHER

   B. FERTILIZERS

   C. PRESERVATIVES

   D. WATER

9. WHAT DO MOST PEOPLE IN MEXICO EAT FOR A SOURCE OF CARBOHYDRATE?

   A. TORTILLAS

   B. SPAGHETTI

   C. BEEF

   D. HUEVOS (EGGS)

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(46) 10. A BOX OF RAISINS WEIGHS 15 OUNCES AND COSTS $2.40. WHAT IS THE UNIT PRICE PER OUNCE OF THE RAISINS?

A. $\frac{\$2.40}{15 \text{ OUNCES}} = \$ .16/\text{OUNCE}$

B. $\frac{15 \text{ OUNCES}}{\$2.40} = \$ 6.30/\text{OUNCE}$

C. $\$2.40 - 15 = \$ 2.25/\text{OUNCE}$

D. $\$2.40 + 15 = \$17.40/\text{OUNCE}$

(47) 11. SOME PEOPLE NEED MORE FOOD THAN OTHERS BECAUSE THEY ARE:

A. DIETING

B. MORE ACTIVE

C. HUNGRIER

D. HEALTHIER

(48) 12. WHO DOES THE JOB OF DEVELOPING NEW FOODS?

A. FOOD SCIENTIST

B. FOOD INSPECTOR

C. VEGETARIAN

D. ASTRONAUT

(49) 13. WHICH FOOD WOULD YOU ADD TO A ROAST BEEF SANDWICH AND MILK TO MAKE A BALANCED MEAL?

A. SLICED TOMATOES

B. MAYONNAISE

C. COTTAGE CHEESE

D. ROLL AND BUTTER

(50) 14. WHY SHOULD SOME FOODS BE STORED AT A COOL TEMPERATURE?

A. TO IMPROVE THE FLAVOR

B. TO PREVENT PHOTOSYNTHESIS

C. TO RIPEN THEM FASTER

D. TO SLOW GROWTH OF BACTERIA

(51) 15. MARIA STOPPED AT THE GROCERY STORE WITH HER FRIENDS AFTER SCHOOL. HER FRIENDS ALL BOUGHT CANDY BARS. WHY DO YOU THINK MARIA ALSO PURCHASED A CANDY BAR?

A. FOR GOOD NUTRITION

B. IT COST LESS THAN FRESH FRUIT

C. TO BE LIKE HER FRIENDS

D. TO LOSE WEIGHT

(52) 16. WHICH NUTRIENT HELPS TO BUILD AND REPAIR MUSCLES AND OTHER BODY TISSUES?

A. CARBOHYDRATE

B. PROTEIN

C. FAT

D. WATER

(53) 17. WHAT CAN YOU DO TO IMPROVE THE SCHOOL LUNCH AREA ATMOSPHERE?

A. GO BACK FOR SECOND HELPINGS

B. HELP WITH CLEAN-UP AFTER EATING

C. BE AS NOISY AS POSSIBLE

D. EAT EVERYTHING ON YOUR PLATE

(54) 18. WHAT DOES A FOOD INSPECTOR CHECK?

A. VARIETY OF FOODS ON THE MENU

B. THE COST OF COOKING EQUIPMENT

C. THE PRICE OF THE FOOD

D. THE CLEANLINESS OF THE KITCHEN, FOOD, AND WORKERS.

(55) 19. WHICH WAY OF FIXING VEGETABLES WILL CAUSE THE GREATEST LOSS OF NUTRIENTS:

A. SERVING THEM RAW

B. BOILING THEM IN LOTS OF WATER

C. STEAMING THEM IN A STEAMER

D. STIR-FRYING THEM IN A PAN

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(56) 20. WHAT FOUR FOODS WOULD MAKE THE MOST NUTRITIOUS DINNER?

A. SPINACH SALAD, CHOCOLATE CAKE, AND BAKED CHICKEN

B. WHOLE WHEAT BREAD, BAKED CHICKEN, MILK, AND RICE

C. CHOCOLATE CAKE, ORANGE SODA, BAKED CHICKEN, AND MILK

D. SPINACH SALAD, WHOLE WHEAT BREAD, BAKED CHICKEN, AND MILK

(57) 21. WHAT DO MOST PEOPLE IN CHINA EAT FOR A SOURCE OF CARBOHYDRATE?

A. FISH

B. RICE

C. TEA

D. CHEESE

(58) 22. IN WHAT WAY CAN UNIT PRICING BE USED TO HELP US WHEN CHOOSING SNACKS?

A. TO FIND WHICH SNACK HAS THE MOST CALORIES

B. TO FIND WHICH SNACK HAS THE MOST IRON

C. TO FIND WHICH SNACK IS THE BEST BUY

D. TO FIND WHICH SNACK IS THE MOST NUTRITIOUS

(59) 23. WHAT IS A NUTRIENT YOU GET FROM ALL FOODS IN THE FRUIT AND VEGETABLE GROUP?

A. VITAMINS

B. FAT

C. OXYGEN

D. HONEY

(60) 24. WHAT IS THE BEST WAY A STUDENT CAN INFLUENCE WHAT FOODS ARE SERVED IN THE SCHOOL LUNCH?

A. THROW AWAY THE FOOD YOU DON'T LIKE

B. ASK TO TALK WITH THE FOOD SERVICE MANAGER

C. ASK TO SET UP VENDING MACHINES IN THE LUNCHROOM

D. BRING YOUR LUNCH FROM HOME

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25. WHAT IS ONE JOB THAT A DIETITIAN DOES?

A. SELLS VITAMIN PILLS

B. WAITS ON TABLES IN A RESTAURANT

C. TEACHES PEOPLE ABOUT GOOD NUTRITION

D. MAKES CAKES IN A BAKERY

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4

Lesson 4 contains the following handout to be used with Lesson 4 of the Staff In-Service Guide.

	Page(s)
1. "Time-Line"	94

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TIME - LINE

SAN MATEO CITY SCHOOL DISTRICT - NUTRITION EDUCATION PROJECT

1979-80 4th Project Year

COMPONENT & OBJECTIVES	ACTIVITIES	DATES	EVIDENCE OF COMPLETION	COMPLETED

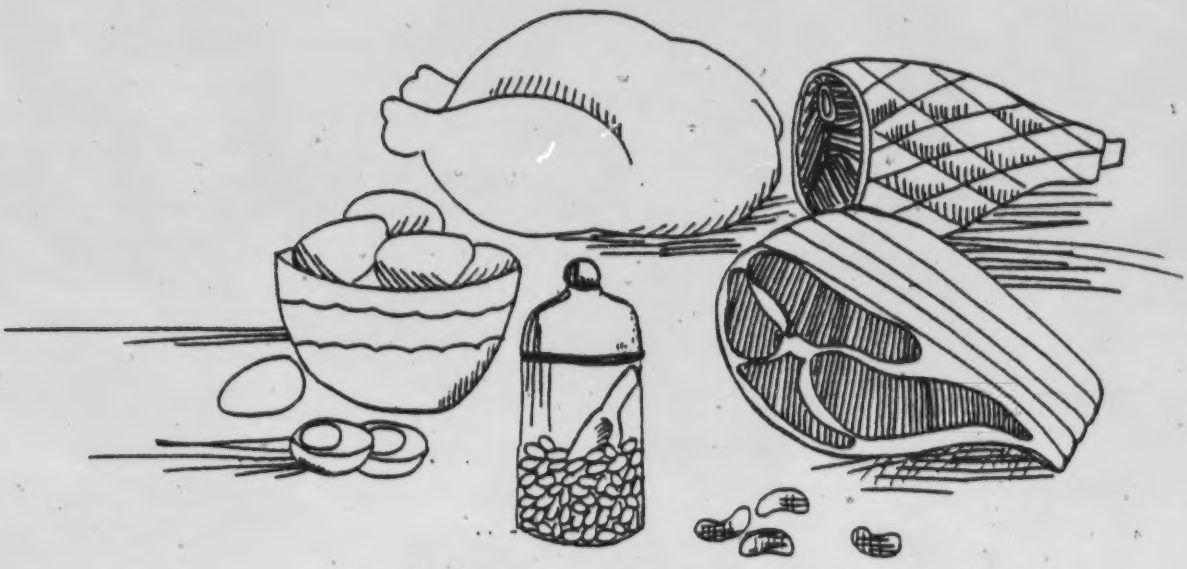
FOOD INTAKE ANALYSIS

5

Lesson 5 contains the following handouts to be used with Lesson 5 of the Staff In-Service Guide.

	Page(s)
1. "Food Groups" pictures of the basic 4 food groups	96 - 103
2. "Nutrition with Nelson" booklet	104 - 123
3. "Leaders"	124

Meat Group



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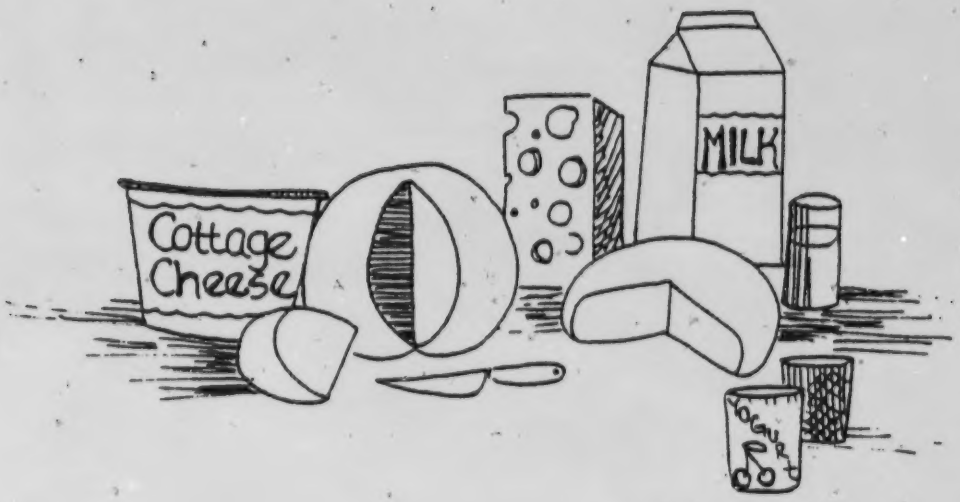
Milk Group



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Bread-Cereal Group

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Fruit-Vegetable Group

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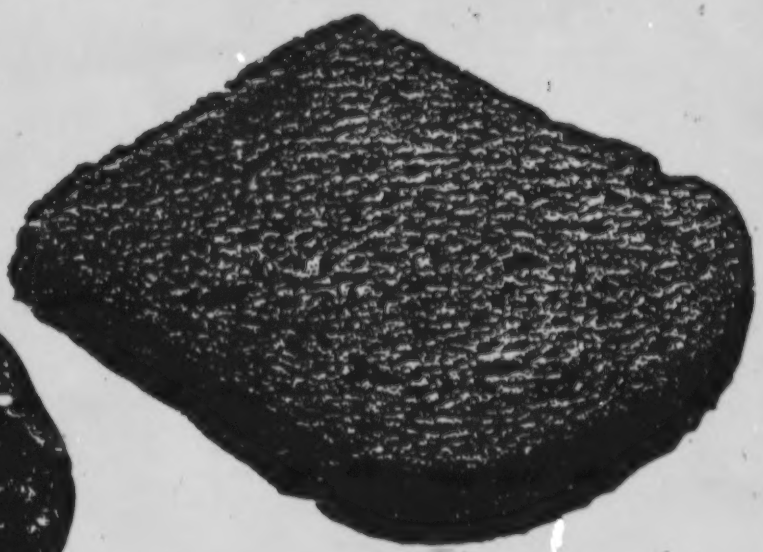
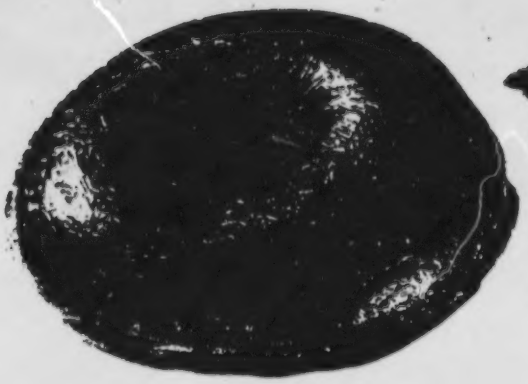
Bread-Cereal Group

BAKED POTATO
1 large



WHOLE WHEAT BREAD



BAGEL

EGG NOODLES
1/2 cup

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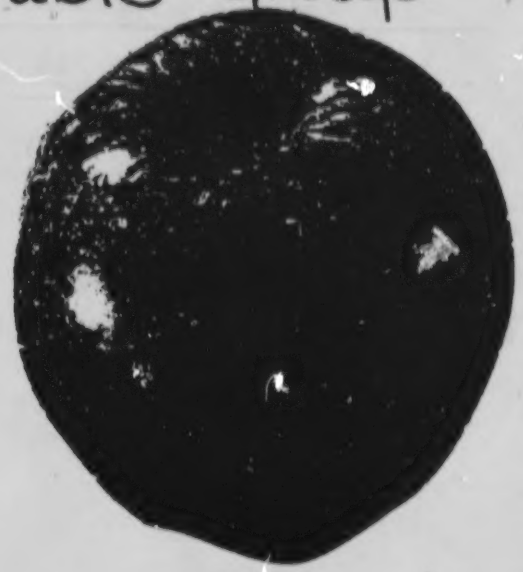
Fruit-Vegetable Group

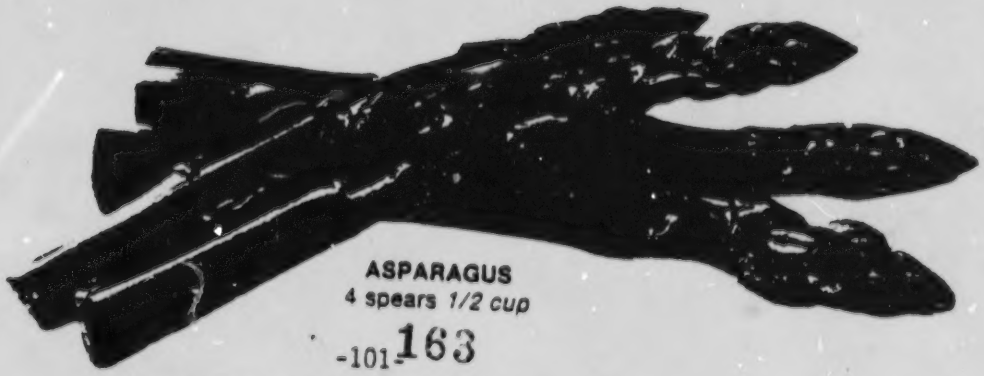
GREEN BEANS
1/2 cup



APPLE
medium

PEAR

LETTUCE
1/6 head *1/2 cup*



ASPARAGUS
4 spears *1/2 cup*

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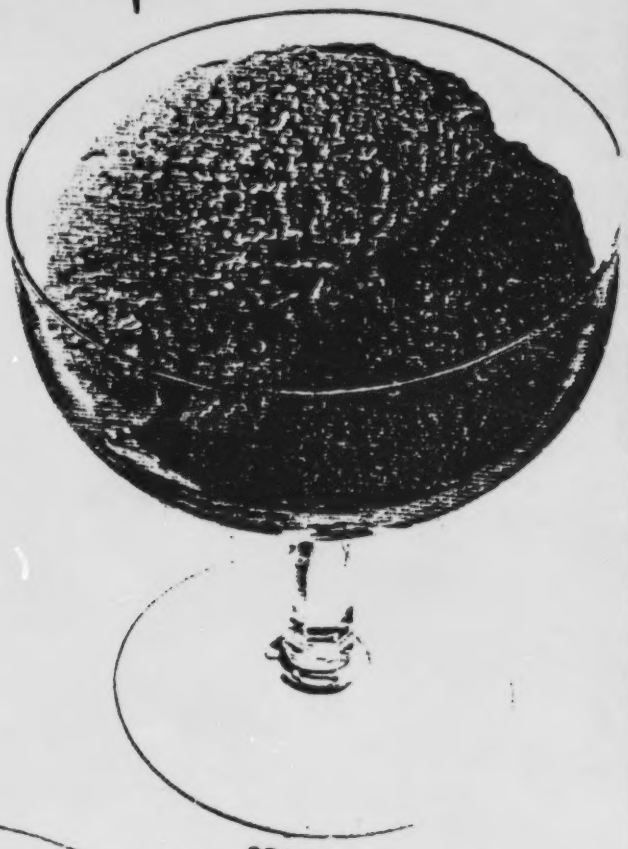
Milk Group

BUTTERMILK
1 cup



ORANGE SHERBET
1/2 cup *1/4 pint*

SKIM MILK
1 cup

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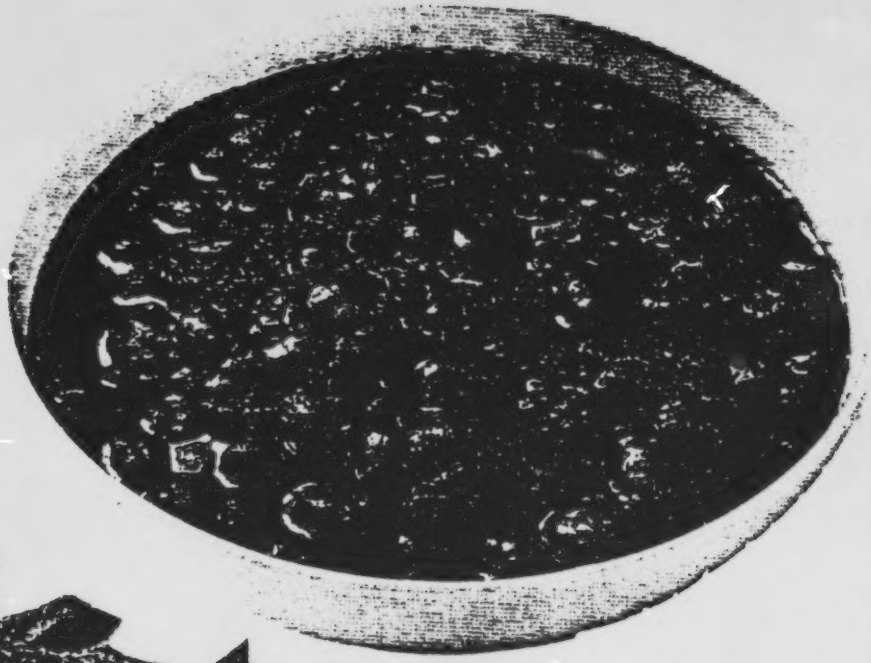
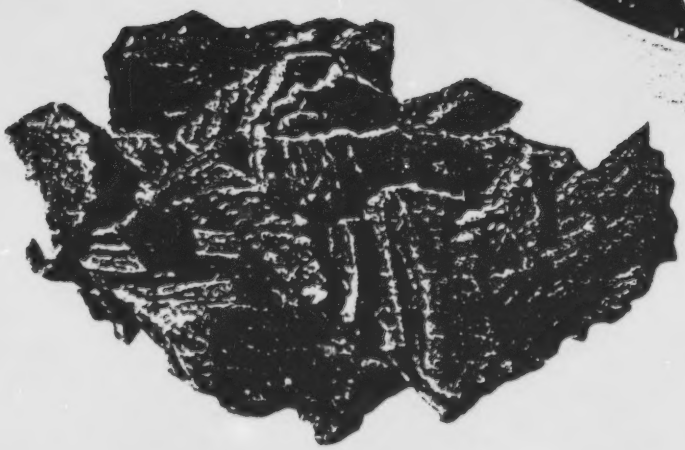
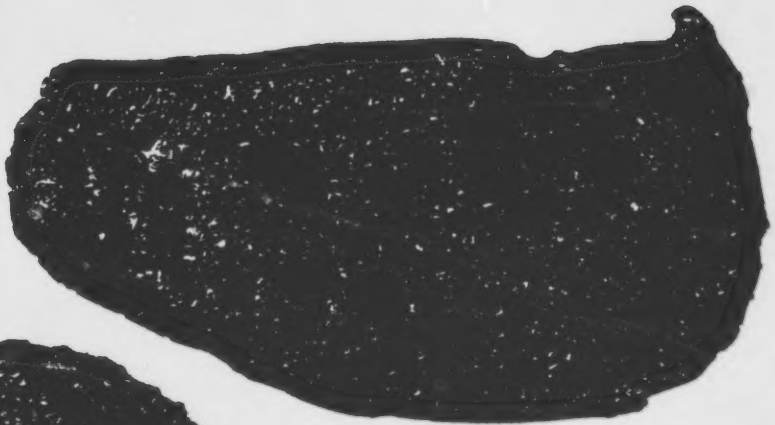
Meat Group



CHILI CON CARNE WITH BEANS
1 cup



TUNA
3 ounces



BEEF LIVER
3 ounces

FRIED CHICKEN
3 ounces
edible portion

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NUTRITION WITH NELSON

THIS PRACTICE BOOK BELONGS TO:

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Most of the food we eat can be arranged in four groups. The Four Food Groups are:

MILK GROUP

MEAT GROUP

VEGETABLE-FRUIT GROUP

BREAD-CEREAL GROUP

There are some foods we eat that do not fit into any of the Four Food Groups. These are called "EXTRA FOODS."

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Milk and most of the foods made from milk fit in this Group. They include:

- Milk, Cocoa, Milkshakes
- Cheese, Cottage Cheese, Yogurt
- Ice Cream
- Custard and Pudding made with Milk

All meats, and some other foods that provide about the same nutrients as meat, fit in this Group. They include:

- Nuts, Peanuts, Peanut Butter
- Eggs
- Dry Beans and Peas, such as Baked Beans, Kidney Beans, Pinto Beans, Refried Beans, Split Peas, Dry Black-eyed Peas
- Beef, Pork, Lamb, Poultry, Fish

Most green plants, or parts of plants, fit in this Group. They include:

- Oranges, Grapefruit, Tomatoes
- Carrots, Potatoes, Broccoli
- Lettuce, Spinach, Cabbage
- Apples, Berries, Grapes
- Green Beans, Green Peas, Corn

Foods made from grains (or flour) fit in this Group. They include:

- Breads, including Muffins, Biscuits, Pancakes, Tortillas
- Cereals, including Corn Flakes, Oatmeal, Rice, Grits
- Pastas, including Spaghetti, Macaroni, Noodles
- Crackers, including Saltines, Graham Crackers

Foods that are mostly sugar or fat, or those that are used mostly for flavoring, are Extra Foods. They include:

- Soft Drinks, Punch, Popsicles
- Jellies and Jams
- Gelatin Dessert
- Sugar Cookies, Doughnuts, Cakes, Pies, Candy, Popcorn
- Butter, Cream, Mayonnaise, Salad Dressing
- Catsup, Mustard, Pickle Relish
- Potato Chips and Corn Chips

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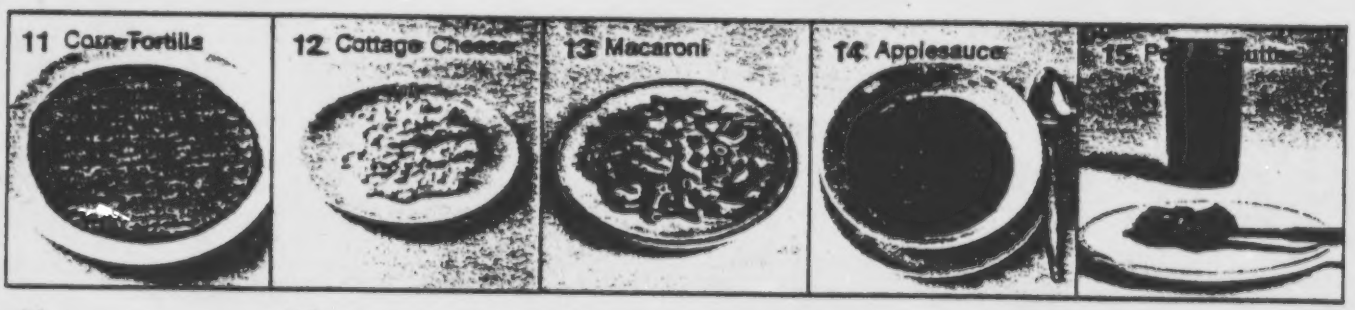
DIRECTIONS: Classify these foods by writing one of the following on the line below the picture: MILK, MEAT, V-F (Vegetable-Fruit Group), B-C (Bread-Cereal Group), X (Extra Foods)

1 _____ 2 _____ 3 _____ 4 _____ 5 _____

6 _____ 7 _____ 8 _____ 9 _____ 10 _____



11 _____ 12 _____ 13 _____ 14 _____ 15 _____

16 _____ 17 _____ 18 _____ 19 _____ 20 _____

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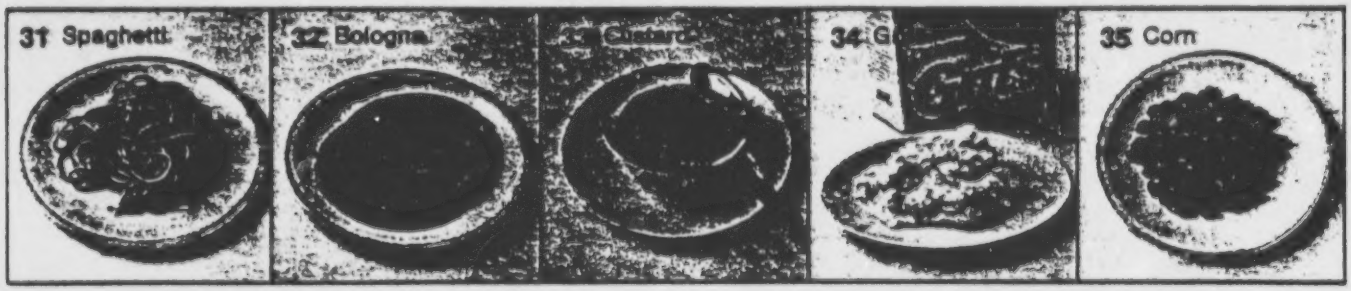
Stop and Wait for Answers

DIRECTIONS: Classify these foods by writing one of the following on the line below the picture: MILK, MEAT, V-F (Vegetable-Fruit Group), B-C (Bread-Cereal Group), X (Extra Foods)

21 _____ 22 _____ 23 _____ 24 _____ 25 _____

26 _____ 27 _____ 28 _____ 29 _____ 30 _____



31 _____ 32 _____ 33 _____ 34 _____ 35 _____

36 _____ 37 _____ 38 _____ 39 _____ 40 _____

Stop

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Listed below are foods that are most often misclassified.
Directions: Put a check (✓) in the correct column.

Food	Milk Group	Meat Group	Vegetable-Fruit Group	Bread-Cereal Group	Extra Foods
1. Cottage Cheese	✓				
2. Cup of Cocoa					
3. Eggs					
4. Butter					
5. Peanut Butter					
6. Baked Beans					
7. Split Pea Soup					
8. Green Peas					
9. Mashed Potatoes					
10. French Fries					
11. Potato Chips					
12. Corn on the Cob					
13. Corn Flakes					
14. Corn Chips					
15. Popcorn					
16. Rice					
17. Noodles					
18. Chocolate Ice Cream					
19. Chocolate Candy Bar					
20. Ice Cream Bar					

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Listed below are foods that may fit into more than one Food Group.
Directions: Classify the foods by putting a check (✓) in each appropriate column.

Food	Milk Group	Meat Group	Vegetable-Fruit Group	Bread-Cereal Group	Extra Foods
1. Taco with Hot Sauce	✓	✓	✓	✓	✓
2. Bologna Sandwich with Mayonnaise		✓		✓	✓
3. Bean Burrito with Cheese					
4. Spaghetti & Meatballs					
5. Sausage Pizza					
6. Hot Dog in Bun with Mustard					
7. Macaroni and Cheese					
8. Hamburger & Bun with Pickles					
9. Peanut Butter & Jelly Sandwich					
10. Tuna and Noodles					
11. Beef Stew with Vegetables					
12. Apple Pie with Ice Cream					
13. Egg Sandwich					
14. Oatmeal with Milk and Sugar					

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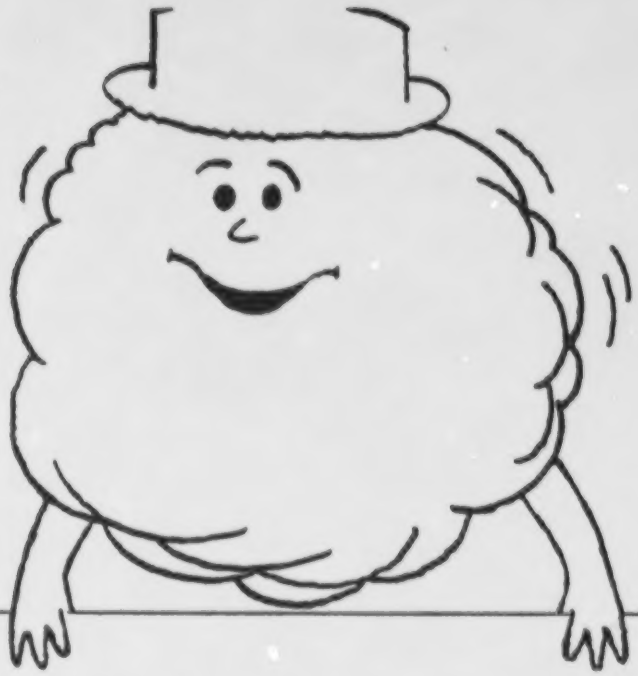

EACH DAY YOU NEED:

_____ OR MORE	Servings from the Milk Group
_____ OR MORE	Servings from the Meat Group
_____ OR MORE	Servings from the Vegetable-Fruit Group
_____ OR MORE	Servings from the Bread-Cereal Group

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Directions: Write the number of Milk Group Servings shown in each picture.

1

Ice Cream Cone (2 Scoops)

_____servings

2

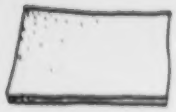
Three Glasses of Milk

_____servings

3

Carton of Yogurt

_____servings

4 

Slice of Cheese

_____servings

5

Milk for Cereal

_____servings

6

Dish of Pudding

_____servings

7

Dish of Custard _____servings

Glass of Chocolate Milk _____servings

_____TOTAL

8

Cheese for a Taco _____servings

Cup of Cocoa _____servings

_____TOTAL

9

Dish of Pudding _____servings

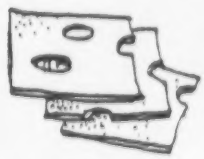
Ice Cream (4 scoops) _____servings

Milkshake _____servings

_____TOTAL

10

Dish of Cottage Cheese _____servings



Three Slices of Cheese _____servings

Milk for Cereal _____servings

_____TOTAL

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9

Ten-year-old Andy ate these foods in one day.

1. Use the "Milk" column to help you count how many Milk Group Servings he ate.

	Andy's Foods	Milk Group
Morning	Grapefruit (1/2)	
	Oatmeal with Milk	
	Cup of Cocoa	
Noon	Tuna Sandwich	
	Pear	
	Chocolate Cake	
	Glass of Milk	
Evening	Orange Popsicle	
	Spaghetti and Meatballs	
	Green Beans	
	Celery Sticks	
	Roll and Butter	
	Carton of Yogurt	

	Milk Group
2. Fill in the boxes: How many servings did Andy eat from the Milk Group?	
What is the minimum number of Milk Servings that Andy needs each day?	
3. Did he eat at least the minimum number of servings? Circle Yes or No.	Yes / No

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Directions: Write the number of Meat Group Servings shown in each picture.

1

Hard-Cooked Egg

_____servings

2

Hamburger

_____servings

3

Four Bags of Peanuts

_____servings

4

Fish Sticks (3)

_____servings

5

Four Peanut Butter Sandwiches

_____servings

6

Bowl of Refried Beans

_____servings

7

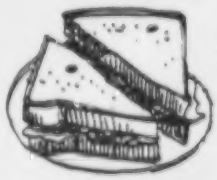
Fried Egg _____servings

Three Slices Bacon _____servings

_____TOTAL

8

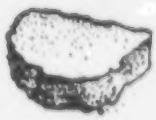
Bowl of Chili _____servings



Tuna Sandwich _____servings

_____TOTAL

9

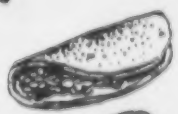


Slice of Meatloaf _____servings

Chicken Leg _____servings

_____TOTAL

10



Meat for One Taco _____servings

Hot Dog _____servings

Slice of Bologna _____servings

_____TOTAL

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Eleven-year-old Judy ate these foods in one day.

1. Use the columns to help you count how many servings she ate from the Milk Group and from the Meat Group.

	Judy's Foods	Milk Group	Meat Group
Morning	Glass of Orange Juice		
	Cold Chicken Leg		
	Slice of Bread with Butter		
	One Slice of Bologna in Sandwich		
Noon	Potato Chips		
	Cola		
	Ice Cream (2 Scoops)		
	Cookies		
Evening	Pork Chop		
	Sweet Potatoes		
	Lettuce Salad		
	Slice of Bread with Butter		
	Glass of Milk		
	Piece of Cake		

	Milk Group	Meat Group
2. Fill in the boxes: How many servings did Judy eat from each group?		
What is the minimum number of servings that Judy needs from each group?		
3. Did she eat at least the minimum number of servings from each group on this day? Circle Yes or No for each group.	Yes No	Yes No

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Directions: Write the number of Vegetable-Fruit Group servings shown in each picture.

1

Glass of Juice

_____servings

2

Two Grapefruit Halves

_____servings

3

Two Peach Halves

_____servings

4

Three Potatoes

_____servings

5

Two Pineapple Slices

_____servings

6

A Green Salad

_____servings

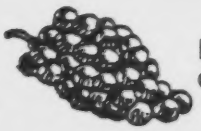
7

Orange _____servings

Green Beans on a Dinner Plate _____servings

_____TOTAL

8



Bunch of Grapes _____servings

Peach Half _____servings

_____TOTAL

9

Two Pear Halves _____servings

Grapefruit _____servings

Tomato _____servings

_____TOTAL

10

Carrot _____servings

Cantaloupe (1/4) _____servings

Lettuce and Tomato for Two Tacos _____servings

_____TOTAL

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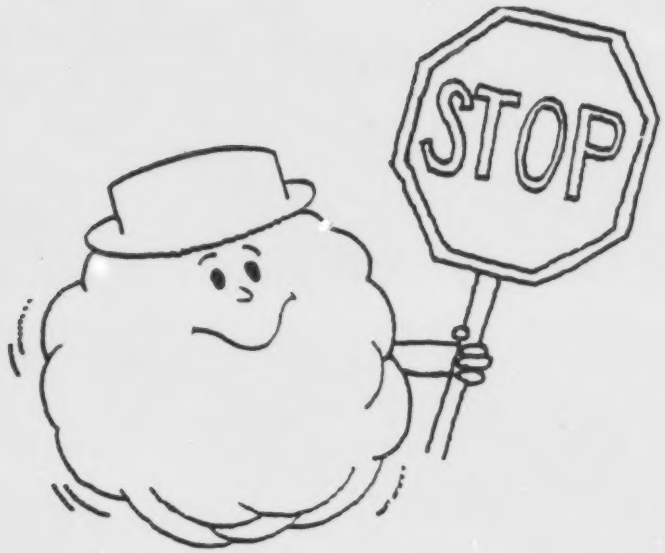

These foods contain lots of VITAMIN C. You need one serving of foods like these each day for healthy skin, muscles and blood vessels.

Oranges	Broccoli
Grapefruit	Dark Leafy Greens
Strawberries	Green Peppers
Cantaloupe	Tomatoes

____ ____

If YES, which food? _____

Which of these foods do you eat? _____

_____

_____

These foods contain lots of VITAMIN A. You need one serving of foods like these every other day for healthy eyes and smooth, healthy skin.

Carrots	Watermelon	Mustard Greens
Yellow Winter Squash	Cantaloupe	Spinach
Sweet Potatoes	Apricots	Turnip Greens

____ ____

If YES, which food? _____

Which of these foods do you eat? _____

_____

_____

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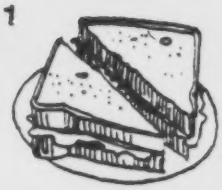
Directions: Write the number of Bread-Cereal Group servings shown in each picture.

1



Sandwich

_____servings

2

Noodles (1/2 cup)

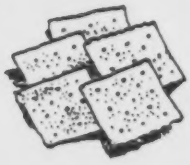
_____servings

3

Hamburger Bun

_____servings

4



Five Soda Crackers

_____servings

5

Rice (1/2 cup)

_____servings

6

Bowl of Cold Cereal

_____servings

7

Hot Dog Bun

_____servings

Biscuit

_____servings

_____TOTAL

8

Spaghetti (1/2 cup)

_____servings

One Roll

_____servings

_____TOTAL

9

Pancake

_____servings

Tortilla

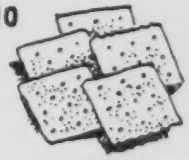
_____servings

Slice of Toast

_____servings

_____TOTAL

10



Five Soda Crackers

_____servings

Bowl of Hot Cereal

_____servings

Muffin

_____servings

_____TOTAL

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Eleven-year-old Sally ate these foods in one day.

1. Use the columns to help you count how many servings she ate from each of the Four Food Groups.
   Mark an "X" in the Extra Foods column if the food cannot be classified.

	Sally's Foods	Milk Group	Meat Group	Vegetable-Fruit Group	Bread-Cereal Group	Extra Foods
Morning	Two Pancakes with Syrup and Butter					
	Glass of Milk					
Noon	Bowl of Chili					
	Five Crackers					
	Two Peach Halves					
	Glass of Milk					
Evening	Ice Cream Cone (2 scoops)					
	Three Fish Sticks					
	Rice					
	Broccoli					
	Fruit Salad					
	Dish of Butterscotch Pudding					
	Muffin with Butter					
	Two Pieces of Cheese Pizza					
	Cola					

2. Fill in the boxes:	Milk Group	Meat Group	Vegetable-Fruit Group	Bread-Cereal Group
How many servings did Sally eat from each group?				
What is the minimum number of servings that she needs from each group?				
3. Did she eat at least the minimum number of servings from each group on this day? Circle Yes or No for each group.	Yes / No	Yes / No	Yes / No	Yes / No

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List all the foods you ate in one day.

1. Use the columns to help you count how many servings you ate from each of the Four Food Groups.
   Mark an "X" in the Extra Foods column if the food cannot be classified.

	Foods I Ate:	Milk Group	Meat Group	Vegetable-Fruit Group	Bread-Cereal Group	Extra Foods
Morning						
Noon						
Evening						

	Milk Group	Meat Group	Vegetable-Fruit Group	Bread-Cereal Group
2. Fill in the boxes: How many servings did you eat from each group? What is the minimum number of servings needed from each group?				
3. Did you eat at least the minimum number of servings from each group? Circle Yes or No each group.	Yes No	Yes No	Yes No	Yes No

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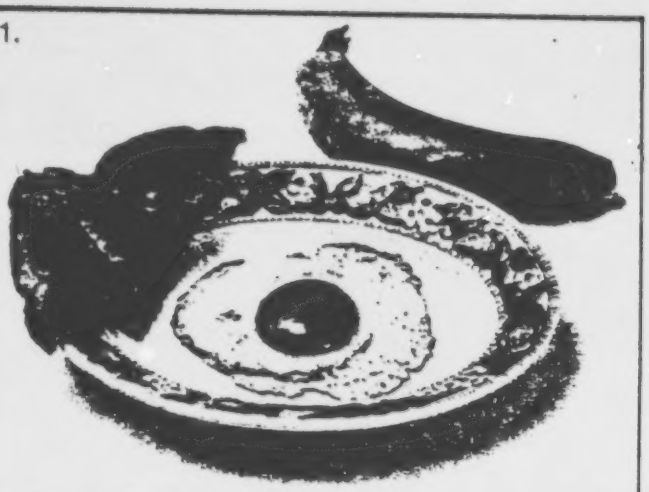
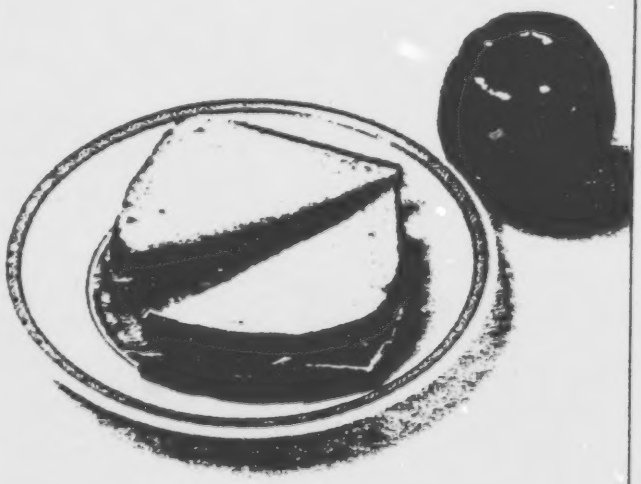
1.



2.

3.



4.

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LEADERS

MILK	MEAT
VEGETABLE - FRUIT	BREAD - CEREAL
MIXED	EXTRA

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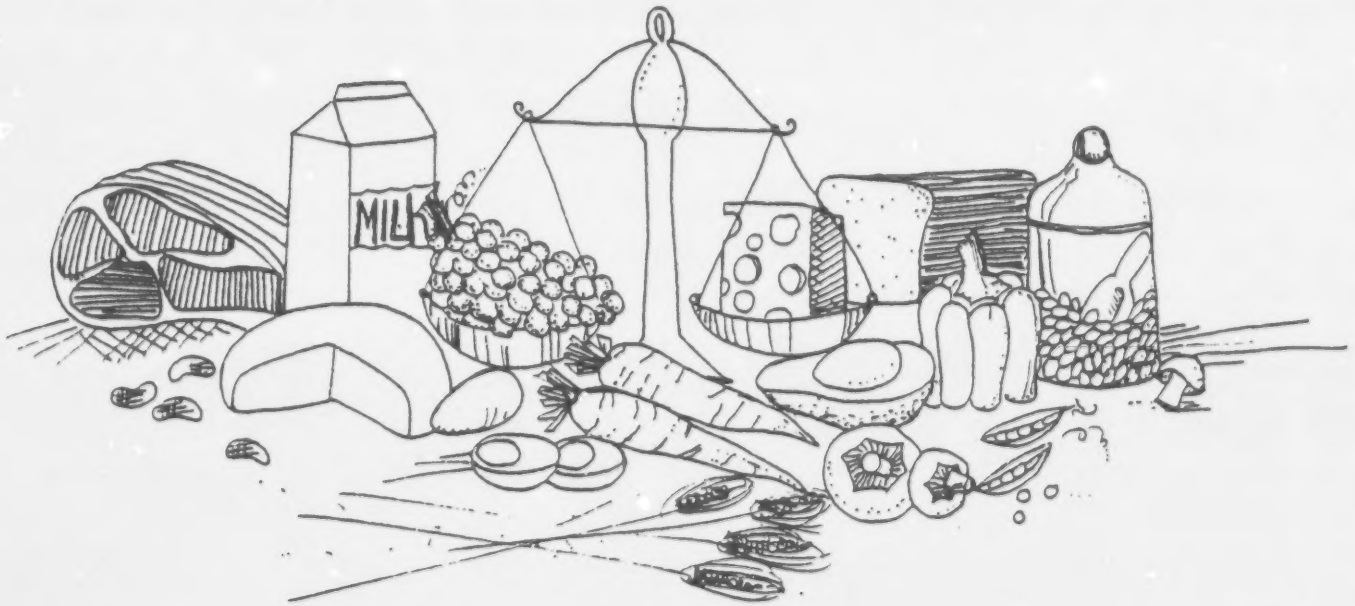
DIGESTION AND NUTRIENTS

6

Lesson 6 contains the following handouts to be used with Lesson 6 of the Staff In-Service Guide.

		Page(s)
1.	"Nutrition Notes" booklet	126 - 154
2.	"RDA"	155
3.	"Digestion System"	156

NUTRITION NOTES



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15	Minerals (Sodium, Potassium)
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TURN NUTRITION CONCERN INTO ACTION

"Nutrition Education Can Improve The Health Status Of The Child"

Physical attainment, though partly determined by heredity, is affected also by the nutritional status of an individual.

During the periods of rapid growth in infancy, childhood, and early adolescence, ones eating habits profoundly affect ultimate physical development in terms of size, strength, and ability to perform.

There are visible signs of poor nutrition that teachers may observe in their students:

Small for age
Weak or fragile bones
Susceptibility to diarrhea
Obesity
Decayed teeth
Tired in the morning (possibly due to missing breakfast)

The relationship of nutrition to emotional health and intellectual development is becoming increasingly clear:

Hungry children (and adults) have difficulty concentrating.

Deficiencies of certain specific nutrients may affect feelings, responses, and reactions in a variety of ways (e.g., forgetfulness, apathy, withdrawal, vague fears, mental depression, emotional instability) depending on the nutrient involved.

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WHAT IS THE BEST WAY TO LEARN ABOUT A BALANCED DIET?

The Basic Four Food Groups are only one way to learn about nutrition. The question is, "Is it the best way?"

THE FOUR FOOD GROUP SYSTEM- A meal pattern guide in which the foods we eat are divided into four separate groups along with the minimum amounts of foos from the groups to be eaten daily. This guide is simple to use and easy to remember.

1. MEAT GROUP- 2 or more servings daily
   Beef, veal, pork, lamb, fish, poultry, eggs
   dry bean, dry peas, and nuts.

2. BREAD/
   CEREAL GROUP - 4 or more servings daily
   Whole grain and enriched breads and cereals and pastas

3. VEGETABLE/
   FRUIT GROUP - 4 or more servings daily
   Citrus fruit and other fruits and vegetables high in Vit C
   Dark leafy green or bright yellow vegetable for Vitamin A
   Other Fruits and vegetables

4. MILK GROUP - 2 or more servings for adults
   3 or more servings for elementary school child

USE OF THE FOUR FOOD GROUPS - The Four Food Groups System and other food groupings serve as a guide for determining nutritional needs and it is a way of introducing nutrition to young children. However, the nutrients necessary for growth and development should be included in the curriculum as soon as possible in order that children may learn the why as well as the what as far as good food choices are concerned.

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TRANSLATING NUTRIENTS INTO FOOD GROUPS

FOOD GROUP	KEY NUTRIENTS
Milk Group	Calcium Protein Riboflavin Vitamin D
Meat Group	Protein Thiamin Niacin Iron
Bread/Cereal Group	B Vitamins (Thiamin, Niacin, Riboflavin) Iron
Vegetable/Fruit Group	Vitamin C Vitamin A

Carbohydrates and fats are found in all the Food Groups as well as in EXTRA foods in which they are the primary nutrients.

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LEADER NUTRIENTS AND GOOD HEALTH

The Leader Nutrients: Three physiological functions of food are 1) to supply energy, 2) to build and repair body tissue, and 3) to regulate body processes. Food materials that supply these needs are called nutrients.

Nutrients may be divided into six general classifications:

1. Protein
2. Fat
3. Carbohydrate
4. Vitamins
5. Minerals
6. Water

Each nutrient performs itw own special job in building or maintaining the body, and no other can take its place. The lack of even one of these essential food elements will hinder the work of others.

NUTRIENT	MAJOR FUNCTIONS	IMPORTANT SOURCES
Carbohydrates	Energy	Grains and sugars
Fats	Energy	Oils, fats, meat, cream
Protein	Growth and repair of cells	Meat and meat substitutes Milk products
Leader Vitamins		
A	Skin health Resist infection	Dark green leafy, and bright yellow fruits and vegetables
B Complex	Helps release energy from carbohydrate, healty nerves	Whole grain and enriched breads and cereals
C	Helps hold cells together, resist infection	Citrus fruits, cabbage, tomatoes
D	Helps body use calcium to form bones and teeth	Vitamin D fortified milk (sunshine)
Leader Minerals		
Iron	Builds red blood cells	Red meat, breads and cereal
Calcium	Builds bones and teeth	Milk products, dark green vegetables
Iodine	Normal thyroid	Seafood, iodized salt

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Recommended Dietary Allowances, Revised 1980*

Designed for the maintenance of good nutrition of practically all healthy people in the U.S.A.

Food and Nutrition Board, National Academy of Sciences-National Research Council.

age and sex group	weight kg.	weight lb.	height cm.	height in.	protein	fat-soluble vitamins: vitamin A	vitamin D	vitamin E	water-soluble vitamins: vitamin C	thiamin	riboflavin	niacin	vitamin B_6	folacin	vitamin B_{12}	minerals: calcium	phosphorus	magnesium	iron	zinc	iodine
					gm.	μg. R.E.†	μg.‡	mg. α T.E.#	← mg. →			mg. N.E.¶	mg.	← μg. →		← mg. →					μg.
infants																					
0.0-0.5 yr.	6	13	60	24	kg. × 2.2	420	10	3	35	0.3	0.4	6	0.3	30	0.5**	360	240	50	10	3	40
0.5-1.0 yr.	9	20	71	28	kg. × 2.0	400	10	4	35	0.5	0.6	8	0.6	45	1.5	540	360	70	15	5	50
children																					
1-3 yr.	13	29	90	35	23	400	10	5	45	0.7	0.8	9	0.9	100	2.0	800	800	150	15	10	70
4-6 yr.	20	44	112	44	30	500	10	6	45	0.9	1.0	11	1.3	200	2.5	800	800	200	10	10	90
7-10 yr.	28	62	132	52	34	700	10	7	45	1.2	1.4	16	1.6	300	3.0	800	800	250	10	10	120
males																					
11-14 yr.	45	99	157	62	45	1,000	10	8	50	1.4	1.6	18	1.8	400	3.0	1,200	1,200	350	18	15	150
15-18 yr.	66	145	176	69	56	1,000	10	10	60	1.4	1.7	18	2.0	400	3.0	1,200	1,200	400	18	15	150
19-22 yr.	70	154	177	70	56	1,000	7.5	10	60	1.5	1.7	19	2.2	400	3.0	800	800	350	10	15	150
23-50 yr.	70	154	178	70	56	1,000	5	10	60	1.4	1.6	18	2.2	400	3.0	800	800	350	10	15	150
51 + yr.	70	154	178	70	56	1,000	5	10	60	1.2	1.4	16	2.2	400	3.0	800	800	350	10	15	150
females																					
11-14 yr.	46	101	157	62	46	800	10	8	50	1.1	1.3	15	1.8	400	3.0	1,200	1,200	300	18	15	150
15-18 yr.	55	120	163	64	46	800	10	8	60	1.1	1.3	14	2.0	400	3.0	1,200	1,200	300	18	15	150
19-22 yr.	55	120	163	64	44	800	7.5	8	60	1.1	1.3	14	2.0	400	3.0	800	800	300	18	15	150
23-50 yr.	55	120	163	64	44	800	5	8	60	1.0	1.2	13	2.0	400	3.0	800	800	300	18	15	150
51 + yr.	55	120	163	64	44	800	5	8	60	1.0	1.2	13	2.0	400	3.0	800	800	300	10	15	150
pregnancy					+ 30	+ 200	+ 5	+ 2	+ 20	+ 0.4	+ 0.3	+ 2	+ 0.6	+ 400	+ 1.0	+ 400	+ 400	+ 150	††	+ 5	+ 25
lactation					+ 20	+ 400	+ 5	+ 3	+ 40	+ 0.5	+ 0.5	+ 5	+ 0.5	+ 100	+ 1.0	+ 400	+ 400	+ 150	††	+ 10	+ 50

*The allowances are intended to provide for individual variations among most normal persons as they live in the United States under usual environmental stresses. Diets should be based on a variety of common foods in order to provide other nutrients for which human requirements have been less well defined. See text for detailed discussion of allowances and of nutrients not tabulated. See preceding table for weights and heights by individual year of age and for suggested average energy intakes.

†Retinol equivalents: 1 retinol equivalent = 1 μg. retinol or 6 μg. β-carotene. See text for calculation of vitamin activity of diets as retinol equivalents.

‡As cholecalciferol: 10 μg. cholecalciferol = 400 I.U. vitamin D.

#α-tocopherol equivalents: 1 mg. d-α-tocopherol = 1 α T.E. See text for variation in allowances and calculation of vitamin E activity of the diet as α-tocopherol equivalents.

¶1 N.E. (niacin equivalent) = 1 mg. niacin or 60 mg. dietary tryptophan.

‖The folacin allowances refer to dietary sources as determined by *Lactobacillus casei* assay after treatment with enzymes ("conjugases") to make polyglutamyl forms of the vitamin available to the test organism.

**The RDA for vitamin B_{12} in infants is based on average concentration of the vitamin in human milk. The allowances after weaning are based on energy intake (as recommended by the American Academy of Pediatrics) and consideration of other factors, such as intestinal absorption; see text.

††The increased requirement during pregnancy cannot be met by the iron content of habitual American diets or by the existing iron stores of many women; therefore, the use of 30 to 60 mg. supplemental iron is recommended. Iron needs during lactation are not substantially different from those of non-pregnant women, but continued supplementation of the mother for two to three months after parturition is advisable in order to replenish stores depleted by pregnancy.

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Journal of The American Dietetic Association
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DIGESTION

Before our bodies can utilize the nutrients in the foods we eat, the food must be broken down to amino acids, simple sugars, and fatty acids and glycerol.

MOUTH:	Saliva breaks starch to double sugar and lubricates food.
STOMACH:	Proteins broken to amino acids by enzymes in the stomach.
SMALL INTESTINE:	Enzymes from pancreas split proteins to amino acids, fats to fatty acids and glycerol, and complete the reduction of starches to simple sugar.
	Vitamins and minerals in food dissolve so they can be used by the body.
	Nutrients pass across intestinal wall to blood plasma which takes nutrients to cells.
LARGE INTESTINE:	Remaining nutrients and water absorbed into body.
	Roughage, bacteria, mucous and dead intestinal cells are expelled from the body.

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NUTRIENTS

Nutrients Defined: Chemical substances in the foods we eat that our body uses for energy, repair, and maintenance

Types of Nutrients:

PROTEIN	FATS	VITAMINS
CARBOHYDRATES	MINERALS	WATER

Body Composition:

65% oxygen
18% carbon
10% hydrogen
3% nitrogen
2% calcium
1% phosphorous
1% other chemicals

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CALORIES

CALORIE - A unit which measures the energy value of foods to the body

CALORIE SOURCES:		
	Proteins	4 calories per gram
	Carbohydrates	4 calories per gram
	Fats	9 calories per gram
	Alcohol	7 calories per gram
	Vitamins, Minerals, Water	no calories

YOUR APPROXIMATE CALORIE NEEDS:

Women	Desirable weight in pounds X 16 calories
Men	Desirable weight in pounds X 17 calories
Boys 9-12	Desirable weight in pounds X 33 calories
Girls 9-12	Desirable weight in pounds X 20 calories
	Add 10% if you regularly take part in a competitive sport with daily practice

WEIGHT GAIN: The body stores energy not used. When excessive fat is stored in our bodies, we are overweight. Over 20% of people in the U.S. are overweight.

WEIGHT LOSS: For most people, decrease calories by 500-1000 per day for gradual, but progressive weight loss. To lose 1 pound of body fat, you must deprive your body of or use up 3500 calories.

500 calories less per day x 7 days = 3500 calories or 1 lb of true weight loss

10 TIPS TO PREVENT WEIGHT GAIN:

1. Eat a well balanced diet. This helps prevent craving for empty calorie snacks.
2. Eat broiled, boiled, or baked foods instead of fried foods.
3. Cut out "empty calories"
4. Exercise - walk more, drive less
5. Say no to second helpings
6. Skip high calorie bed-time snacks.
7. Skip high calorie sauces, gravies.
8. Don't add sugar to cereals, fruits, coffee, or tea.
9. Eat fruit for dessert instead of baked goods.
10. Weigh once a week -- keep a record.

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CALORIES (Continued)

CALORIES EXPENDED PER HOUR - Averages

Bicycling	200 - 600	Office Work	130
Dancing	290	Painting	150
Dressing	110	Ping Pong	350
Driving	110	Running	550
Exercise	280	Sitting	95
Lying Down	60 - 80		

WATER LOSS VS. BODY FAT LOSS:

The body is approximately 98% water. The sodium in your body helps to maintain a delicate but important balance between fluid in the cells and in the fluid between the cells.

Reducing salt intake will alter the balance and the water in the cells will pass out of the body through the kidneys. The same will occur on a starvation diet or a low carbohydrate, high-protein diet.

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PROTEIN

Proteins: Combinations of Carbon, Hydrogen, Oxygen & Nitrogen used in cell building

What They Do:

1. Build and repair all body cells and tissues
2. Used for energy or stored as fat if intake exceeds need

Composition: C, H, O, & Nitrogen form amino acids (Nitrogen is found only in protein)

Digestion: Protein is broken down to amino acids

Amino Acids = 20 types of protein building blocks

a) 12 can be made by the body from C, H, O, Nitrogen

b) 8 cannot be made - these are the essential amino acids. We must eat foods that contain these.

c) Amino Acids are the product of protein digestion. They travel to cells in plasma. Cells select the amounts and types of amino acids they need.

d) Most protein --> amino acid digestion takes place in the stomach and small intestine.

Complete Proteins: Foods which supply all the amino acids (all animal proteins are complete)

Incomplete Proteins: Foods which do not supply all of the amino acids (all plant proteins are incomplete)

Protein Complementing: Combining incomplete proteins to get all the amino acids at the same meal; eg. dried beans + rice, or milk + peanut butter

Protein Defiency: Unlikely in U.S. diet. We get approximately 2 times our protein need daily. In severe deficiency, "Kwashiorkor" results.

Foods: Protein is a leader-nutrient in the MILK GROUP & MEAT GROUP. Several foods in the BREAD-CEREAL GROUP are good sources.

R.D.A.: 1 gram of protein for each kilogram (2.2 pounds) we weigh. (125 lbs. person needs 53 grams of protein per day.)

U.S.R.D.A.: 45* or 65** grams

*45 grams if protein quality is equal to or greater than milk protein.

**65 grams if protein quality is less than milk protein.

FATS

What It Does:

1) Store Energy
2) Carries Fat Soluable Vitamins A, D, E And K
3) Provides Fatty Acids We Cannot Make

DIGESTION:

Fats are broken down to Fatty Acids and Glycerol in the Small Intestine.

SATURATED VS. UNSATURATED FATTY ACIDS:

Saturated fatty acids are solid at room temperature (Butterfat, Animal fat, Coconut oil).

Unsaturated fatty acids are liquid at room temperature (Corn, Soy, Peanut, Safflower Oils).

WHY FATS ARE ESSENTIAL TO US:

Provide unsaturated fatty acids our body needs but cannot make. These are called "essential fatty acids".

CHOLESTEROL:

A fatty substance present in all our cells. It is necessary to:

1) maintain cell structure
2) govern passage of nutrients in and out of cells
3) produce Vitamin D and sex hormones
4) form bile salts to aid in fat digestion

FOOD SOURCES:

Meat Group	Milk Group	Extra Foods
Beef, lamb, pork, chicken, eggs, nuts	Whole milk, cheese, ice cream	Butter, oils, Salad Dressing, Mayonnaise, oils

R.D.A.: 25-35% of total calories from fat.

CALORIES IN FAT: 9 Calories per gram

SOME CALORIE VALUES:

Mayonnaise	1 Tbsp.	110 Calories
Salad Oil	1 Tbsp.	125 Calories
Whole Milk	1 Cup	160 Calories
Skim Milk	1 Cup	90 Calories

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CARBOHYDRATE

WHAT IT DOES:

1) Provides energy for body
2) Stored as fat if intake exceeds need

FORMS:

1) Sugars:
   - Glucose: end product of all carbohydrate digestion, known as "blood sugar"
   - Fructose: fruit sugar (honey)
   - Sucrose: table sugar (glucose + fructose)
   - Lactose: milk sugar
2) Starch: primary Carbohydrate of vegetables and grains
3) Cellulose: indigestible starch form, a form of dietary fiber

DIGESTION: All Carbohydrates are used for energy as glucose or stored in liver as glycogen for reserve energy.

FOODS: Found in all Four Food Groups and Extra Foods

BREAD-CEREAL GROUP	VEG/FRUIT GROUP	EXTRAS
All	Fruits Root Vegetables	All Candy, Cake, Sugar, Honey
MEAT GROUP	**MILK GROUP**	
Dried Beans & Peas Peanuts	Milk Ice Cream	

R.D.A.: No specific number of grams of Carbohydrate are recommended because fat and protein can be converted to carbohydrate (and then to glucose) for energy needs.

Approximately 500 Calories from Carbohydrate per day is adequate.

U.S.R.D.A.: No U.S.R.D.A. has been made.

CALORIES IN CARBOHYDRATE: 4 Calories per gram

LOW CARBOHYDRATE DIETS: These are of necessity in high fat, high protein diets. The glycerol and amino acids are used for cellular energy needs. During this process, large amounts of ketones, by-products of fat metabolism, build up in the blood resulting in loss of appetite and a feeling of euphoria or well being. There is evidence that this is harmful.

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LOW CARBOHYDRATE DIETS: (Continued)

Protein metabolism produces by-products which are filtered through the kidneys. The high protein content of the low carbohydrate diet taxes the kidneys and may therefore be dangerous in individuals with a tendency to kidney problems.

The high-fat content of the diet is not recommended due to the possibility of early development of heart disease.

Weight loss will occur in most individuals and much of this will be due to water loss. The weight loss will not be permanent in most individuals who go off the diet unless they simultaneously reduce caloric intake to a weight-reduction level.

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MINERALS

WHAT THEY DO:

Like Vitamins: regulate body processes

Unlike Vitamins: become part of the actual structure of the body (bones) and part of the working chemicals in our body (hemoglobin)

HOW MUCH? Very small amounts of major minerals (eg. CALCIUM, SODIUM, POTASSIUM, IRON)

Even smaller amounts of trace minerals (eg. ZINC, COPPER, IODINE, MANGANESE)

CALCIUM

What it does:	Builds bones and teeth Helps clot blood Aids muscle contraction Activates enzymes	
Where Stored:	Teeth and ends of bones. When other cells need it it is released to them.	
Deficiency:	Problems with teeth Reduced bone density & strength Muscle spasms	
R.D.A.:	Growing children	1300 mg
	Adults	800 mg
U.S.R.D.A.:	Adults	1000 mg
Food:	Milk	285 mg. Calcium per 8 oz.
	Hard Cheese	225 mg. Calcium per oz.
	Green Leafy Veg.	80-150 mg. per ½ cup serving

IRON

What It Does:	needed to make healthy blood and carry oxygen to cells	
Where Stored:	liver and blood	
Deficiency:	Iron Deficiency Anemia (pale blood, lack of energy)	
Who Needs Most:	Children have increased need during growth Menstruating and child-bearing women have increased need	
R.D.A.:	Growing children	10 mg
	Adult females	18 mg
	Adult males	10 mg
	Females over 55	10 mg
U.S.R.D.A.:	18 milligrams	
Foods:	MEAT GROUP	Liver, egg yolks
	VEGETABLE/FRUIT GROUP	Dark leafy greens
	BREAD/CEREAL GROUP	Enriched or whole grain

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SODIUM AND POTASSIUM

1. Responsible for normal water balance between body fluids and cells
2. Sodium found in body fluids
   Potassium found in cells
3. Deficiency: unlikely (dehydration and irregular heart beat)
4. There is no R.D.A. for these minerals.
5. Sources: Normal diet supplies adequate amount

OTHER MINERALS

1. Only trace amount needed
2. Supplied by foods that contain other necessary nutrients

   Copper -- needed to make hemoglobin

   Zinc and Chromium -- needed to make certain hormones

   Iodine -- helps thyroid gland work

   Cobalt and Selenium -- essential to formation and working of certain vitamins

   Fluorine -- strengthens enamel of teeth

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VITAMINS

Vitamins: "Catalysts" which help regulate the body processes
"Vita" (necessary) "min" (life)

VITAMIN A - Fat Soluble

What It Does: helps keep skin and mucous membranes healthy
helps bones and teeth grow
good for night vision

Deficiency: stunted growth; dry, flakey skin; night blindness

Overdose: occurs from taking large amounts (eg. 50,000 IV's) daily for several months and can cause lack of appetite, itchy skin, tender swelling of bones, irritability

Foods:

MEAT GROUP	MILK GROUP	VEG/FRUIT	EXTRAS
Eggs, liver	Fortified milk	Carrots	Butter
	Cheddar cheese	Sweet potatoes	Fortified
		Canteloupe	Margarine
		Apricots	
		Dark leafygreen	

R.D.A.:	2500 I.U.*	4-6 year olds
	3300 I.U.	7-10 year olds
	5000 I.U.	Adults
U.S.R.D.A.:	5000 I.U.	(includes margin of safety for most people above minimum body needs)

VITAMIN B COMPLEX - A group of more than 15 water-soluble vitamins

B_1 also called Thiamin
B_2 also called Riboflavin
Niacin
B_{12}
Folic Acid also called folacin

What They Do:
1) keep nervous system healthy
2) release energy from food
3) Promote healthy appetite and digestion

Deficiencies:

Thiamine	Beri-Beri
Riboflavin	Ariboflavinosi (a= without)
Niacin	Pellagra
B_{12}	Pernicious Anemia
Folic Acid	Folic Acid Anemia

*International Units

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VITAMIN B COMPLEX (Continued)

Foods:	Thiamine	MEAT GROUP, esp. pork and eggs BREAD & CEREAL GROUP
	Riboflavin	MILK GROUP MEAT GROUP
	Niacin	MEAT GROUP (peanut butter esp. good) BREAD & CEREAL GROUP
R.D.A. - by age	Thiamine:	Approximately 1.0 milligrams varies with age need based on carbohydrates in diet
	Riboflavin:	1.1 - 1.8 grams
	Niacin:	12-16 mg - children 4-10 years 18 mg - adult male 13 mg - adult female
	B_{12}:	1.5 - 2.0 micrograms - children 4-10 years 3.0 micrograms - adults
	Folic Acid:	.2 milligrams - 4-6 years old .3 milligrams - 7-10 years old .4 milligrams - adults

U.S.R.D.A. - generous levels which provide margin of safety above minimum body needs for most nutrients

Thiamine	1.5 milligrams
Riboflavin	1.7 milligrams
Niacin	20 milligrams
B_{12}	6 milligrams
Folic Acid	0.4 milligrams

VITAMIN C -- Water soluble (also known as Ascorbic Acid)

What It Does: Protects body against infection
Helps make cementing materials that hold body cells together
Helps heal wounds and broken bones

Deficiency: Scurvy (bleeding gums, poor wound healing, susceptibility to infection)

Overdose: Unlikely - not stored in body

Foods: VEGETABLE/FRUIT GROUP (primary source)

Citrus fruits	Strawberries	Canteloupe
Pineapple	Broccoli	Raw Cabbage
Tomatoes	Potatoes	

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VITAMIN C - (Continued)

R.D.A.: 40 mg - 4-10 years old
45 mg - Adults

U.S.R.D.A.: 60 mg - (provide wide margin of safety)

VITAMIN D - Fat Soluble ("The Sunshine Vitamin")

A group of about 10 fat-soluble vitamins. Only 2, D_2 and D_3 are important in nutrition. D_3 is formed in the skin when the body is exposed to sunshine.

What It Does: Helps absorb calcium in the digestive tract and build calcium and phosphorous into bones

Deficiency: Rickets (poorly developed bones of low density and strength)

Overdose: After 1 to 3 months of large intake, these symptoms may occur - loss of appetite, thirst, frequent urination, constipation, pallor, dehydration, calcification of long bones

Foods:

MILK GROUP	MEAT GROUP
Fortified Vit. D Milk	Eggs Tuna Salmon

R.D.A.: 400 I.U. for all ages

U.S.R.D.A.: 400 I.U. for all ages

VITAMIN E - Fat Soluble

What It Does: In lower animals, maintains normal muscle function, brain and blood cells

Protects vitamin A and carotene

Deficiency: Not found in general population

Foods: Widely distributed

MILK GROUP	MEAT GROUP	VEG/FRUIT GROUP	BREAD/CEREAL
Milk	Pork Liver Egg Yolks	Green Leafy Vegetables	Whole Grain Cereals

R.D.A.: Expressed as Vit. E activity
9-15 I.U. (increases slightly with age)

U.S.R.D.A.: 30 I.U.

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VEGETARIAN VOCABULARY

VEGETARIANISM is a general term that applies to those who do not use flesh foods in their diets (although some vegetarians will eat fish). There are however, different kinds of vegetarians. Here is a brief glossary relating to vegetarianism:

LACTO-VEGETARIANS use dairy products such as milk, cheese and butter.

LACTO-OVO-VEGETARIANS also include eggs in their diet.

MACROBIOTICS is a Zen Buddhist dietary system that strives for a progressively limited diet according to spiritual development. The ultimate objective is a mono diet of brown rice.

MONO-VEGETARIANS eat only one food, such as brown rice or soybeans.

NATURAL FOODS are pure, unrefined, and unprocessed foods without additives or artificial ingredients.

NATURAL VEGETARIANS will not eat refined or processed foods, such as sugar or bleached flour. Some will eat only raw, uncooked foods.

ORGANIC FOODS are those that are grown without the use of chemical fertilizers or pesticides.

PURE VEGETARIANS only use grains, legumes, nuts, fruits, and vegetables. Some pure vegetarians will not eat honey, but others will.

VEGANS are pure vegetarians who, for ethical reasons, refrain from using any animal products such as leather. Vegans often refuse vaccinations because they are prepared from animal cultures.

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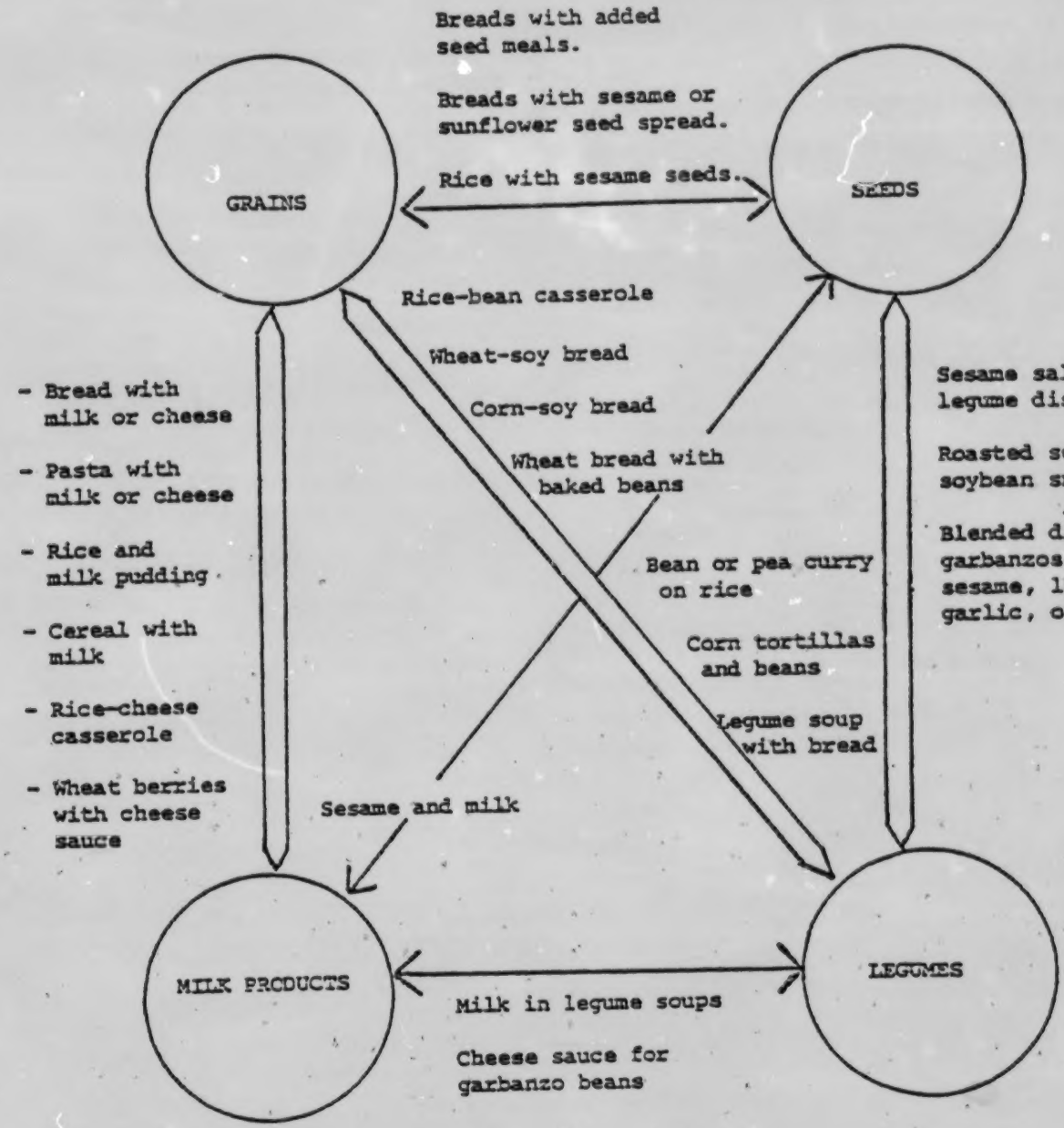
CHART II

SUMMARY OF COMPLEMENTARY PROTEIN RELATIONSHIPS


Breads with added seed meals.
Breads with sesame or sunflower seed spread.
Rice with sesame seeds.
GRAINS
SEEDS
Rice-bean casserole
Wheat-soy bread
Corn-soy bread
Wheat bread with baked beans
Bean or pea curry on rice
Corn tortillas and beans
Legume soup with bread
- Bread with milk or cheese
- Pasta with milk or cheese
- Rice and milk pudding
- Cereal with milk
- Rice-cheese casserole
- Wheat berries with cheese sauce
Sesame and milk
Sesame salt on legume dish
Roasted seeds-soybean snack
Blended dip of garbanzos, sesame, lemon, garlic, oil
MILK PRODUCTS
LEGUMES
Milk in legume soups
Cheese sauce for garbanzo beans

Means complementarily more generally confirmed between several items in each group.

Means complementary relationship demonstrated only between a few items in each group.

Courtesy of Frances Moore Lappe' from Diet For A Small Planet, Ballantine Books, New York.

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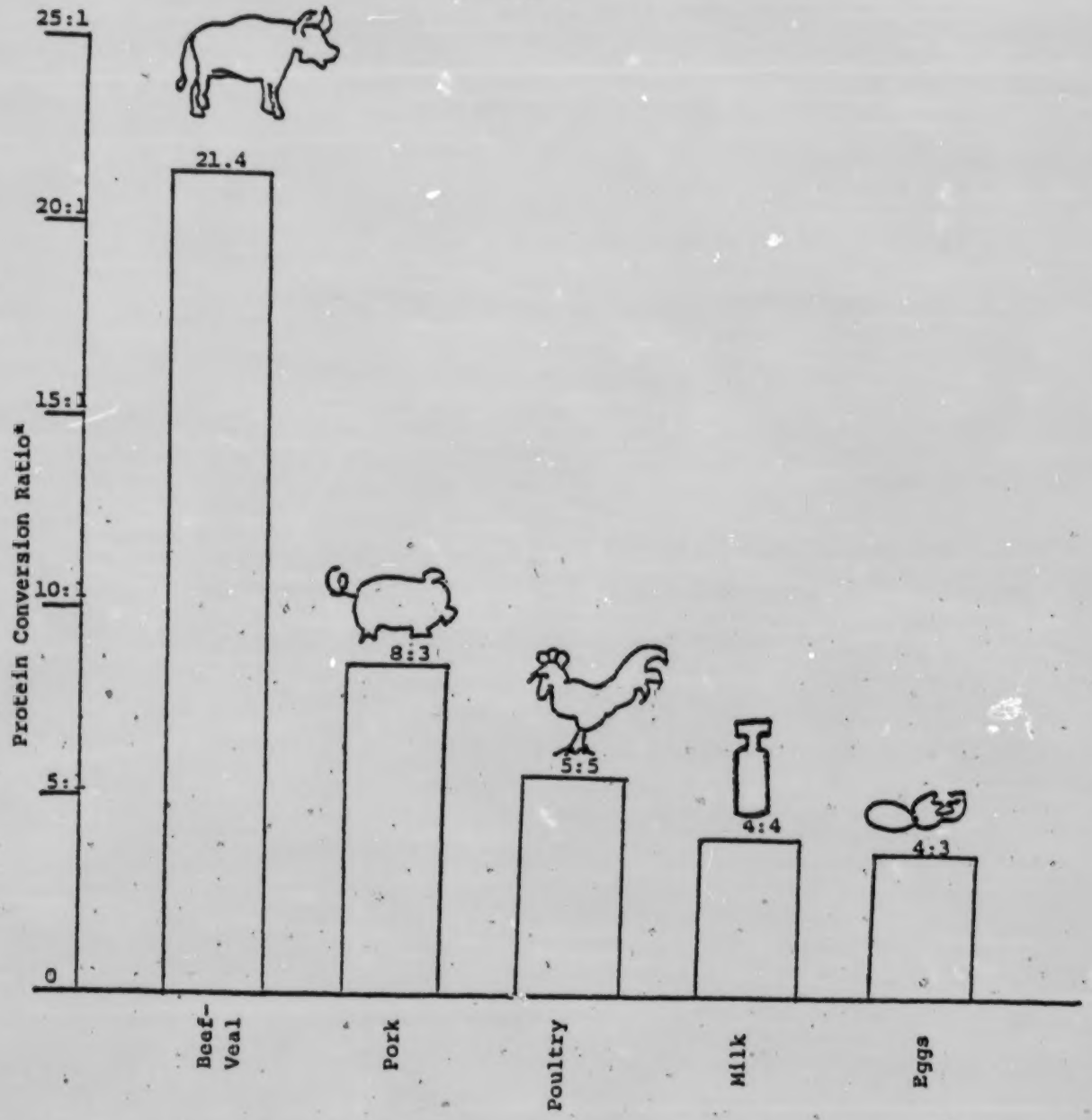
LIVESTOCK PROTEIN CONVERSION EFFICIENCY



*Number of pounds protein fed livestock to produce one pound protein for human consumption.

Courtesy of Frances Moore Lappé from Diet For A Small Planet, Ballantine Books, N.Y.

PRESERVING NUTRIENTS IN THE KITCHEN

WHY COOK FOODS AT ALL?

1. Cooking softens the cellulose or fiber of many plant foods and makes the nutrient available to us.
2. Some nutrients are released when food is heated.
3. Cooking destroys some toxic substances in foods (like soybeans).
4. Cooking makes some foods palatable.

WHAT PRECAUTIONS SHOULD YOU TAKE IN COOKING TO PRESERVE NUTRIENTS?

Meats: Do not over cook or over brown as high temperatures for a long time can considerable damage their protein content.

Fats: Fats spoil by becoming rancid when exposed to light and heat. When rancid, fats can destroy vitamins and cause illness.

Oils -- store in refrigerator in airtight containers protected from light

Foods containing large amounts of oil (whole grain flours and nut meats) need cool, airtight storage.

Nuts in the shell are protected fairly well.

Vegetables-Use a steamer or cook with a small amount of water to reduce the loss of water-soluble vitamins (Vitamin C and B Complex)

Pressure cooking reduces cooking time and nutrient losses even more.

Vitamins: Fat soluble vitamins A, D, E are more stable in cooking than water soluble vitamins B & C.

Vitamin A -- is stable during mild cooking but destroyed in frying when oil is kept at high temperatures.
Vitamin A in butter and margarine is destroyed when the oil goes rancid.

Vitamin D -- is stable in cooking and storage.

Vitamin E -- is lost when fats go rancid.

Vitamin C -- to retain this vitamin in citrus fruit juices, store in cold, airtight, dark space. Do not add making soda to vegetables because the alkali will destroy the Vitamin C.

Thiamin (B) destroyed by heat and air (eg. toast has 10 to 30% less thiamine than bread)

Riboflavin (B_2) destroyed by light

To protect riboflavin in milk, our best source, store milk in cartons or dark colored glass. Light in a clear glass bottle, 50% of riboflavin is destroyed.

Niacin -- Most stable B Vitamins, but lost from food by leaching into cooking water.

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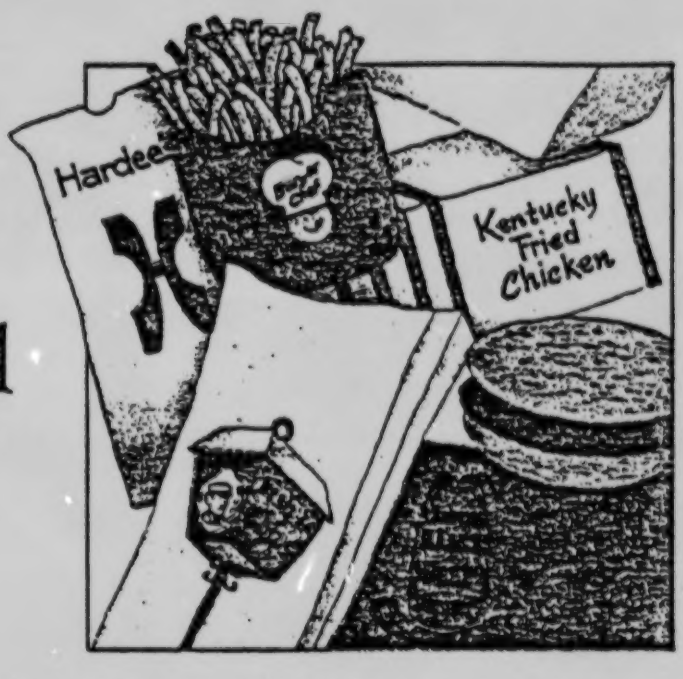
Minerals: The main concern here is the minerals that are leached from foods that are cooked in large amounts of water.

SUMMARY:

To Protect Nutrients:

1. Do not overcook foods.
2. Cook vegetables in small amounts of water.
3. Use the cooking water for soups or sauces.
4. Do not let fats go rancid.
5. Store fresh foods in cool areas preferably dark and airtight.

How Nutritious Are Fast-Food Meals?



By 1980, if the present trend continues, Americans will eat half their meals outside the home. Doubtless we will eat many of those meals at McDonald's, Kentucky Fried Chicken, Hardee's, or at one or more of the many other fast-food chains that even now serve up some $10-billion worth of meals a year.

Reasons for the growing popularity of fast-food chains appear obvious enough. For one thing, the food is generally cheap as restaurant food goes. The most frequently ordered meal at McDonald's—a "Big Mac" hamburger sandwich, french fries, and a chocolate shake—costs only $1.75. That's a bargain when you consider the saved time and effort of the persons who would otherwise cook and clean up at home. The food is filling. And, judging by the fact that customers return to the successful chains time and again, many Americans like the way it tastes.

But as fast food assumes an ever more significant role in the diet, it's appropriate to inquire about the nutritional value of such assembly-line eating. That's what CU concentrated on in this project.

We bought and tested meals typical of those served up at eight of the biggest chains in the country: Burger Chef, McDonald's, and Burger King, which specialize in variations on the hamburger theme; Pizza Hut; Kentucky Fried Chicken; Hardee's, which builds its meals around a pseudo-steak sandwich or hamburger; Arby's, which serves roast beef sandwiches; and Arthur Treacher's Fish & Chips, which specializes in breaded fried fish.

We will go into detail on our tests and results later. But first, some highlights:

- The meat in McDonald's "Big Mac" hamburger sandwich weighs about 25 per cent less than the meat in Burger Chef's "Super Shef" and Burger King's "Whopper." Yet the McDonald's meal provided ample protein (as much as Burger King's, for example).
- Pizza Hut is the protein champion by far (its "Supreme" 10-inch pizza contains plenty of cheese and other protein-rich foods). But none of the other seven meals tested was inadequate in protein.
- Nearly all the meals were too heavy on calories. Several of them provided almost one-half the daily ration of calories needed by the typical adult male. Thus, it's likely that a man who ate at one of these chains regularly, and also ate two other substantial meals a day, would put on weight, especially if he sat behind a desk most of the time between meals. (A deskbound woman would put on more weight because she needs fewer calories.)
- A lot of those excess calories come in a form almost useless from a nutritional point of view—sugar and other sweeteners that provide a quick shot of energy but no nutrients. Many of these "empty calories" are to be found in the beverage—either a "thick shake" (not to be confused with a *milk* shake, about which more later) or a cola drink.
- All the meals were deficient in at least a few nutrients usually considered essential in a well-rounded diet. A small nutrient deficiency is not a matter of great concern. But when a meal falls short in 10 essential nutrients, as Arthur Treacher's did, "Fish & Chips" lovers had best start thinking carefully about what they eat the rest of the day.

SOME NUTRITIONAL RULES OF THUMB

The table on page 280 shows the total weight of each meal and the weight of the individual constituents. More significant are the columns showing the total calories and the amounts of protein, carbohydrate, and fat. Those columns summarize the nutritional pluses and minuses of each meal. Here's a simple guide to interpreting the nutritional information in the table:

Calories. As a guideline for the amount of calories one should consume each day, the National Academy of Sciences-National Research Council (NAS-NRC) has established a Recommended Daily Dietary Allowance (RDA) for both

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sexes and for various age groups and body weights. For the typical adult man between the ages of 23 and 50, the calorie RDA is 2700; for children from 7 to 10, the calorie RDA is 2400. (The "typical adult man," it should be noted, is 5 feet 9 inches tall and weighs 154 pounds. Bigger men need somewhat more calories; smaller men, somewhat less. Given equal size and weight, women need slightly fewer calories than men.) The calories, which are measurements of energy, come from three principal components of food—protein, carbohydrate, and fat.

Protein. Known as the body's builder and repairer, protein consists of a complex variety of amino acids. Meat, poultry, and fish are rich protein sources. So are milk and most milk products. (But not butter; that's largely fat.) Legumes—dried beans, peas, lentils, and the like—also have lots of protein, as do eggs and peanut butter. The NAS-NRC has established a guideline RDA for protein. For the typical adult man it would be 56 grams; for the typical 7-to-10-year-old child, male or female, 36 grams.

Carbohydrate. Carbohydrates are often associated with the empty calories of refined sugar. But carbohydrates also come from the starches in potatoes and cereal grains and the sugars natural to many other foods that contain a variety of essential nutrients—vitamins and minerals. A good daily diet should include some bread and other grain products, as well as vegetables and fruit. If it does, it will include a certain amount of carbohydrate. But table sugar and other sweeteners are carbohydrate sources that contain only empty calories. There is no specific requirement for carbohydrates in the diet, nor has there been a guideline set for the amount of carbohydrate humans need daily, although the NAS-NRC Food and Nutrition Board has recommended 100 grams as a minimum. Nutritionists generally agree that the amount needed is low, but all our fast-food meals exceed 100 grams of carbohydrates—and thus, as only one of three daily meals, could contribute to a daily diet likely to be overly rich in carbohydrates. Your best guideline is to make sure your family's carbohydrates come mainly from fruit, vegetables, bread, and cereals, rather than from sugar or sweetened food.

Fat. This third source of energy is the one that's usually right before your eyes—on the meat, in the frying pan, in the bottle of oil, or as butter or margarine. It's the most concentrated source of energy, because one gram of fat is converted into nine calories, not the four calories that a gram of protein or carbohydrate produces. Thus, a little fat goes a long way, and a little more goes too far. You do need some fat; it's the only source of linoleic acid (an essential nutrient), and it's a carrier for vitamins A, D, E, and K. There are no guidelines for how much fat one should eat daily. Suffice it to say that most Americans get ample fat, usually far more than they need. Since fat converts into so many calories per gram, it's a good food component to cut down on if your daily diet includes more calories than it should.

Other nutrients. The body needs many vitamins and minerals as well as protein, and a well-balanced diet, one that contains a variety of foods, will include them all. Recommended Daily Dietary Allowances have not been established for

WHY WE DIDN'T FEED RATS THIS TIME

When CU reported on the nutritional value of breakfast cereals in the February issue, we noted that comparisons could best be made through studies of how rats fared on the cereals. Yet in this report on fast-food meals we compare the nutritional value of the ingredients without having fed the food to rats. How come?

Packaged cereal is a highly processed food. One can't assume that corn will behave like corn in the body once a manufacturer tortures it into *Quisp* or *Sugar Pops*. The food served by fast-food chains, on the other hand, is relatively "natural." We can measure the nutrients through recognized microbiological methods and predict their behavior in the body with accuracy.

Protein is a good example. We know the quality and biological availability of protein from ground beef, chicken, cheese, fish, and other foods. Therefore, a laboratory measurement of the amount of such natural foods present in a meal tells us enough of what we need to know about the adequacy of the protein content. But we don't know what the quality of protein in breakfast cereals is after the cereal-derived starches, flours, and grains have been processed. Some of these proteins may complement each other—and thus improve overall protein quality—and some may not. One good way to determine the quality of such artificial products is to feed them to growing animals and see how the animals make out.

IODINE: A POTENTIAL PROBLEM

During our analyses of the meals served at fast-food chains, CU found one nutrient, iodine, present in surprisingly large quantity. On average, the fast-food meals tested for the accompanying report contained more than 30 times the Recommended Daily Allowance for iodine established by the National Academy of Sciences-National Research Council. Small amounts of iodine are necessary in the diet, mainly to prevent goiter. But no one has established how much is too much.

Can a continued high intake of iodine do harm? A recent review made by the Federation of American Societies for Experimental Biology for the Food and Drug Administration concluded that "adverse reactions to iodine in food are not a significant clinical or public health hazard." Yet little is known about a diet that contains as much iodine as we found in fast-food meals, nor did the review mentioned consider regular consumption of such high levels of iodine. It is known that too much iodine could affect the proper functioning of the thyroid gland. Thus, the review made for the FDA concluded that the amounts of iodine in the American diet should be evaluated periodically. We hope the FDA heeds the suggestion.

Where does all that iodine come from? Some of it may come from the iodized salt used in the preparation of the fast-food meals, but not all of it—or the meals would be inedible. There are two other likely sources: the rolls, bread, and breading made by bakeries that probably use high levels of iodates in their processes; or from residues of iodine compounds that may have been used to clean and sterilize food-processing equipment.

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every known essential nutrient. But our consultant did analyze the fast-food meals for a host of nutrients for which RDA's do exist. These include: folacin (folic acid), niacin, thiamine, riboflavin, pyridoxine, vitamins B_{12} and C, total vitamin A (both retinol and carotene), phosphorus, calcium, magnesium, iron, zinc, and iodine. Our consultant also analyzed the meals for biotin, pantothenic acid, and copper—nutrients for which the Food and Drug Administration has established labeling guidelines—and for total minerals, fiber, and moisture. We judged a meal deficient in a nutrient if it failed to provide one-third the daily allowance guideline.

THE BEVERAGE PROBLEM

The nutritional booby trap common to all the fast-food meals we tested is the beverage. Both the shakes and the cola drinks contributed significantly to the general overabundance of calories and to the excessive amount of carbohydrate found in our analyses.

All the shakes are called "thick" shakes—perhaps because they are indeed thick, perhaps because the words "thick" and "milk" have a rough resemblance. They are rarely milk shakes. Milk shakes contain whole milk and ice cream; the sweet, heavy froths served at these fast-food chains usually do not. Judging by the fact that the shakes did contribute to the protein content of the meals, however, they no doubt do contain an appreciable amount of nutritious fat-free milk solids in addition to an appreciable amount of sweetener and chemical thickener. Our shakes averaged about 334 calories, most of them empty calories. (Note, by the way, that the table gives the weight of beverage in avoirdupois ounces, not the volume in fluid ounces. That's because the shakes are so thick and puffed with air that we couldn't measure their volume accurately.)

The cola drinks are, of course, familiar beverages that contain nothing of nutritional value. Our colas averaged 111 calories, all devoid of other nutrients. Cola drinks contain the drug caffeine (as they must by law to be labeled "cola"). The cola drinks we analyzed averaged about 30 milligrams (mg) of caffeine; a brewed cup of coffee contains about 100 mg of caffeine, on average.

Given the American appetite for shakes and cola drinks, and given the enormous advertising of cola drinks, one can hardly expect fast-food chains to refrain from offering them. Unfortunately, the ones we visited offered little other choice. Everyone would be better off, in our opinion, drinking water instead of the shakes and cola drinks served at these establishments. If you can't wheedle a glass of water off the assembly line, unsugared tea or black coffee is the next best bet for an adult (neither offers any nutritional value, but neither do they add appreciably to the calorie count), and milk, juice, or a low-calorie soda, where available, would be better for children.

People on low-sodium diets face a problem at most fast-food chains. The specialty item is almost always presalted, and the potatoes are usually presalted. The Pizza Hut meal had the highest sodium content of all—four grams. That translates into about 1¼ teaspoons of table salt—a full day's supply for a person on the mildest of sodium-restricted diets. The six meat meals each contained nearly one teaspoonful of salt, still a lot for someone on a diet. We found only negligible amounts of sodium in the Arthur Treacher's meal.

THOSE MISSING NUTRIENTS

The six nutrients most commonly in short supply in fast-food meals are: biotin, folacin, pantothenic acid, total vitamin A, iron, and copper. These nutrients, which perform a variety of functions in growth and life-support, are derived from many food sources, some of which would usually be part of almost any standard diet that includes a variety of foods. If you eat at a fast-food chain regularly, it would be wise to make sure that your other meals include such nutritious foods as beans, dark green leafy vegetables, yellow vegetables, and a variety of fresh fruits. That should overcome the nutritional deficiencies of fast-food meals.

THE EIGHT FAST-FOOD MEALS

The three hamburger meals are listed first, in order of amount of protein provided. The other meals follow in protein order. Descriptions of the meals with comments are on the facing page.

	Price	Total weight (oz.)	Meat weight (oz.)	Bread weight (oz.)	Potatoes weight (oz.)	Trimmings weight (oz.)	Beverage weight (oz.)	Total calories	Protein (grams)	Carbohydrates (grams)	Fat (grams)
BURGER CHEF	$1.75	28.9	3.0	4.0	4.1	2.7	12.7	1300	47	181	41
McDONALD'S	1.75	18.7	2.3	2.9	3.5	1.3	8.8	1100	40	143	41
BURGER KING	1.70	20.6	3.2	4.0	2.6	2.2	8.5	1200	40	147	47
PIZZA HUT	2.74	32.2	19.0[3]	—	—	—	13.2	1200	72	152	33
KENTUCKY FRIED CHICKEN	2.08	22.7	7.9[4]	0.8	2.0	—	12.1	1300	65	141	57
HARDEE'S	1.89	21.1	3.2	2.2	4.3	0.3	10.4	1100	41	143	41
ARBY'S	1.95	22.9	2.7	2.8	2.9	2.3	12.2	1200	37	166	40
ARTHUR TREACHER'S	1.84	24.3	2.8	2.5[5]	4.7	—	14.7	900	22	101	42

[1] *Trimmings include sauces, tomato slice, cheese, pickle, onion, lettuce, or cole slaw provided with the meal.*
[2] *Weight of total pizza.*
[4] *Including breading, but without bones.*
[5] *Weight of breading on fish.*

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Fast-Food Chains, One Bite at a Time

Here, in summary, is the evaluation of the nutritional quality of each meal we measured.

Burger Chef

Our Burger Chef meal consisted of a "Super Shef" hamburger, french fries, and a chocolate shake. It would load children with half their total daily need for calories and come close to supplying half the calorie needs of an adult, too. The greatest nutritional drawback of the Burger Chef meal was its high carbohydrate content—higher in weight than that of any of the other meals. Most of those carbohydrates were empty calories of sweetness in the shake. (The same criticism can be made of the other shakes we tested; see facing page.) The meal was low in biotin, folacin, and pantothenic acid for adult and child; vitamin A for adult.

McDonald's

We ordered a "Big Mac" hamburger, french fries, and a chocolate shake. The McDonald's meal provided less meat than the other burger meals and less total food. So perhaps the familiar advertising theme, "You deserve a break today at McDonald's," refers to the dietary break of slightly fewer calories than you get at the other hamburger chains. The protein content was more than adequate. The meal was low in biotin, pantothenic acid, and total vitamin A for both age groups.

Burger King

We bought the "Whopper" hamburger, french fries, and a chocolate shake. That meal contained more meat and less potatoes than the other two burger meals—and more fat, which probably came from the meat. As with the Burger Chef meal, calories came to half of a child's daily needs and nearly half of an adult's. The meal was low in biotin, folacin, pantothenic acid, and copper.

Pizza Hut

Here we bought a 10-inch "Supreme" pizza—a pie appliquéd with tomato sauce, cheese, ground sausage, mushrooms, pepperoni, onions, and green pepper—and a cola drink. It provided the most protein of any of the meals, far exceeding a whole day's RDA for any age. Yet the total calories weren't unusually high, and the fat content was the lowest of all. This was clearly the best food buy, considering that the pizza alone would provide a single meal's worth of protein for two persons. But it's by no means perfect. Surprisingly, considering its constituents, this meal was the only one that failed to have one-third the RDA for vitamin C for both adult and child. (The high baking heat probably destroyed the vitamin C.) The meal was also low in biotin and pantothenic acid for both age groups, and it contained more sodium than anyone on a sodium-restricted diet should have at one meal (see facing page).

Kentucky Fried Chicken

Colonel Sanders' meal contained three pieces of fried chicken, french fries, a roll, and a chocolate shake. That added up to half the daily calorie need of the adult and to more than half of the child's needs. (But it's probably unlikely that many 7-year-olds could chew their way through all that food.) This meal contained considerably more meat than the hamburger meals and, as a direct consequence, a lot more protein—more than a whole day's RDA for adult and child. An excess of protein does no harm other than the harm done by the excess of calories likely to follow too much of any food component. (Note: we weighed the meat without the bone but with the breading—we just couldn't successfully separate the breading from the chicken. However, we believe the weight of the breading was not so high as to affect the general outlines of our findings.) With all that meat came more fat than in any of the other meals tested: The Colonel's frying process results in a greasy bird in hand; not only do your fingers need lickin', they need washin'. All in all, the Kentucky Fried Chicken meal represents a lot of food for the money, perhaps even a surfeit of food. The meal was low in biotin, folacin, and vitamin A for adult and child.

Hardee's

This meal consisted of a flaked and formed steak, a bun, french fries, and a chocolate shake. Calories, protein, carbohydrates, and fat were fairly comparable to that of the burger meals. And the steak was comparable to a hamburger (a "flaked and formed steak" is just shredded meat tenderized and formed into the shape of a steak). The meal was low in biotin, pantothenic acid, and total vitamin A for both age groups.

Arby's

Arby's serves up sliced beef on a bun, two potato patties, and cole slaw (the roast beef plate). We also bought a chocolate shake. Arby's main contribution to fast-food technology appears to be its mastery of the art of paper-thin slicing. We counted an average of 28 slices of beef per sandwich, each slice *nine-thousandths* of an inch thick. But all those slices weighed only 2.7 ounces. That's an adequate portion of meat, but not a generous one. Thus the meal contained less protein than any of the other meat meals, although enough for one of three daily meals. Arby's meal also contained the second highest measure of carbohydrates, and, again, a lot of that was empty calories from the shake. It also fell short in biotin, folacin, pantothenic acid, total vitamin A, and copper for both age groups.

Arthur Treacher's

This meal contained two pieces of breaded fried fish, french fries, and a cola drink. That added up to the fewest total calories and the least amount of protein. We don't mourn the low calorie count, and there was still enough protein to provide one-third the daily needs of man and child. But this meal contained too little biotin, pantothenic acid, niacin, thiamine, total vitamin A, calcium, magnesium, iron, copper, and zinc for both adult and child.

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Recommended Dietary Allowances, Revised 1980*

Designed for the maintenance of good nutrition of practically all healthy people in the U.S.A.

Food and Nutrition Board, National Academy of Sciences-National Research Council

age and sex group	weight kg	weight lb	height cm	height in	protein	fat soluble vitamins: vitamin A	vitamin D	vitamin E	water soluble vitamins: vitamin C	thiamin	riboflavin	niacin	vitamin B_6	folacin	vitamin B_{12}	minerals: calcium	phosphorus	magnesium	iron	zinc	iodine
					g	µg RE†	µg ‡	mg αTE§	◊ mg ◊			mg NE¶	mg	◊ µg ◊		◊ mg ◊					µg
Infants																					
0.0-0.5 yr.	6	13	60	24	kg × 2.2	420	10	3	35	0.3	0.4	6	0.3	30	0.5**	360	240	50	10	5	40
0.5-1.0 yr.	9	20	71	28	kg × 2.0	400	10	4	35	0.5	0.6	8	0.6	45	1.5	540	360	70	15	5	50
Children																					
1-3 yr.	13	29	90	35	23	400	10	5	45	0.7	0.8	9	0.9	100	2.0	800	800	150	15	10	70
4-6 yr.	20	44	112	44	30	500	10	6	45	0.9	1.0	11	1.3	200	2.5	800	800	200	10	10	90
7-10 yr.	28	62	132	52	34	700	10	7	45	1.2	1.4	16	1.6	300	3.0	800	800	250	10	10	120
Males																					
11-14 yr.	45	99	157	62	45	1,000	10	8	50	1.4	1.6	18	1.8	400	3.0	1,200	1,200	350	10	15	150
15-18 yr.	66	145	176	69	56	1,000	10	10	60	1.4	1.7	18	2.0	400	3.0	1,200	1,200	400	10	15	150
19-22 yr.	70	154	177	70	56	1,000	7.5	10	60	1.5	1.7	19	2.2	400	3.0	800	800	350	10	15	150
23-50 yr.	70	154	178	70	56	1,000	5	10	60	1.4	1.6	18	2.2	400	3.0	800	800	350	10	15	150
51+ yr.	70	154	178	70	56	1,000	5	10	60	1.2	1.4	16	2.2	400	3.0	800	800	350	10	15	150
Females																					
11-14 yr.	46	101	157	62	46	800	10	8	50	1.1	1.3	15	1.8	400	3.0	1,200	1,200	300	18	15	150
15-18 yr.	55	120	163	64	46	800	10	8	60	1.1	1.3	14	2.0	400	3.0	1,200	1,200	300	18	15	150
19-22 yr.	55	120	163	64	44	800	7.5	8	60	1.1	1.3	14	2.0	400	3.0	800	800	300	18	15	150
23-50 yr.	55	120	163	64	44	800	5	8	60	1.0	1.2	13	2.0	400	3.0	800	800	300	18	15	150
51+ yr.	55	120	163	64	44	800	5	8	60	1.0	1.2	13	2.0	400	3.0	800	800	300	10	15	150
pregnancy					+ 30	+ 200	+ 5	+ 2	+ 20	+ 0.4	+ 0.3	+ 2	+ 0.6	+ 400	+ 1.0	+ 400	+ 400	+ 150	18	+ 5	+ 25
lactation					+ 20	+ 400	+ 5	+ 3	+ 40	+ 0.5	+ 0.5	+ 5	+ 0.5	+ 100	+ 1.0	+ 400	+ 400	+ 150	18	+ 10	+ 50

*The allowances are intended to provide for individual variations among most normal persons as they live in the United States under usual environmental stresses. Diets should be based on a variety of common foods in order to provide other nutrients for which human requirements have been less well defined. See text for detailed discussion of allowances and of nutrients not tabulated. See preceding table for weights and heights by individual year of age and for suggested average energy intakes.

†Retinol equivalents: 1 retinol equivalent = 1 µg. retinol or 6 µg. β-carotene. See text for calculation of vitamin A activity of diets as retinol equivalents.

‡As cholecalciferol: 10 µg. cholecalciferol = 400 I.U. vitamin D.

§ = α-tocopherol equivalents: 1 mg. d-α-tocopherol = 1 I.U. See text for variation in allowances and calculation of vitamin E activity of the diet as α-tocopherol equivalents.

¶1 N.E. (niacin equivalent) = 1 mg. niacin or 60 mg. dietary tryptophan.

**The folacin allowances refer to dietary sources as determined by *Lactobacillus casei* assay after treatment with enzymes ("conjugases") to make polyglutamyl forms of the vitamin available to the test organism.

††The RDA for vitamin B_{12} in infants is based on average concentration of the vitamin in human milk. The allowances after weaning are based on energy intake (as recommended by the American Academy of Pediatrics) and consideration of other factors, such as bioavailability; see text.

‡‡The increased requirement during pregnancy cannot be met by the iron content of habitual American diets or by the existing iron stores of many women; therefore, the use of 30 to 60 mg. supplemental iron is recommended. Iron needs during lactation are not substantially different from those of non-pregnant women, but continued supplementation of the mother for two to three months after parturition is advisable in order to replenish stores depleted by pregnancy.

RDA

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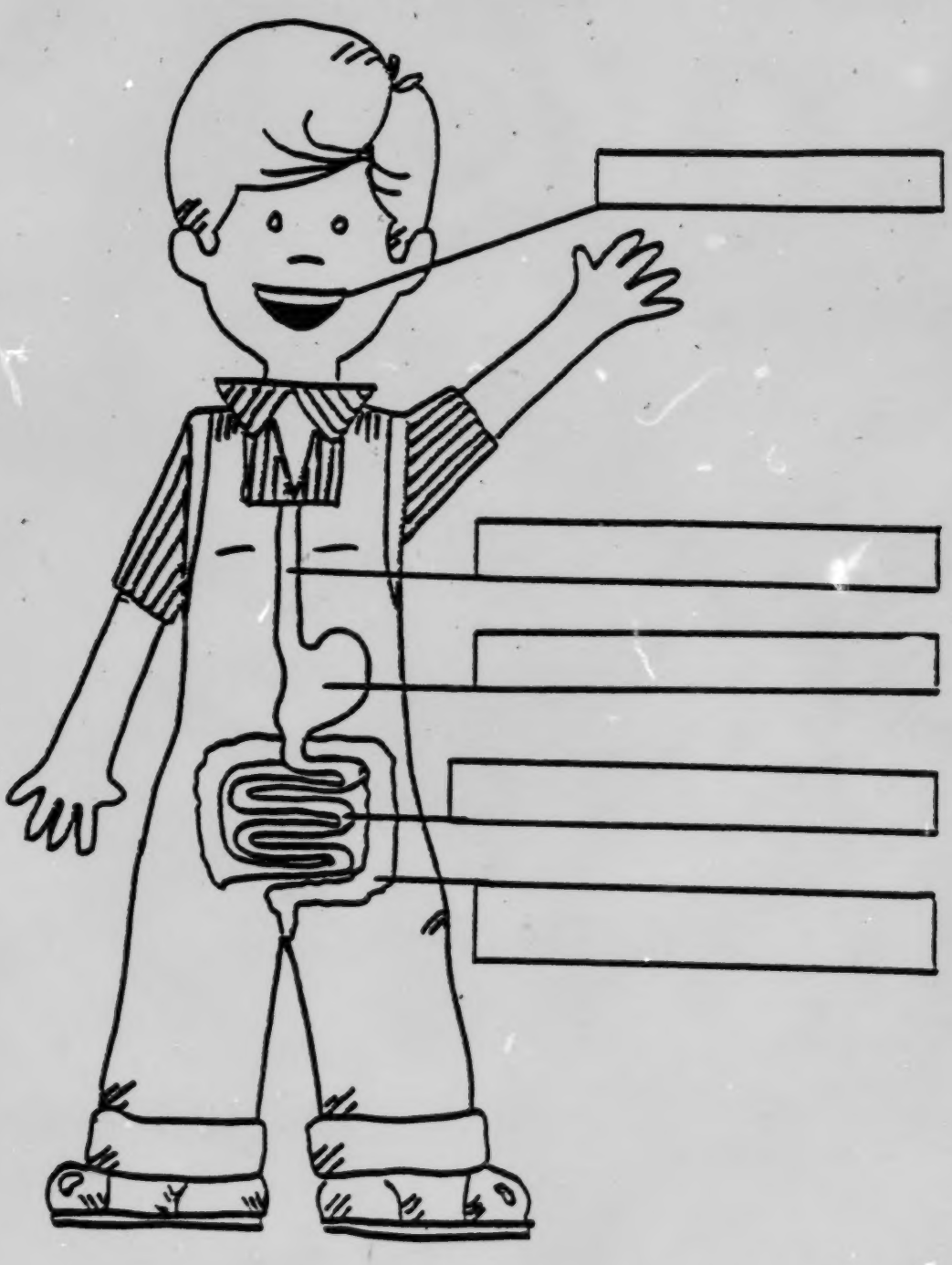

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THE TYPE "A" LUNCH

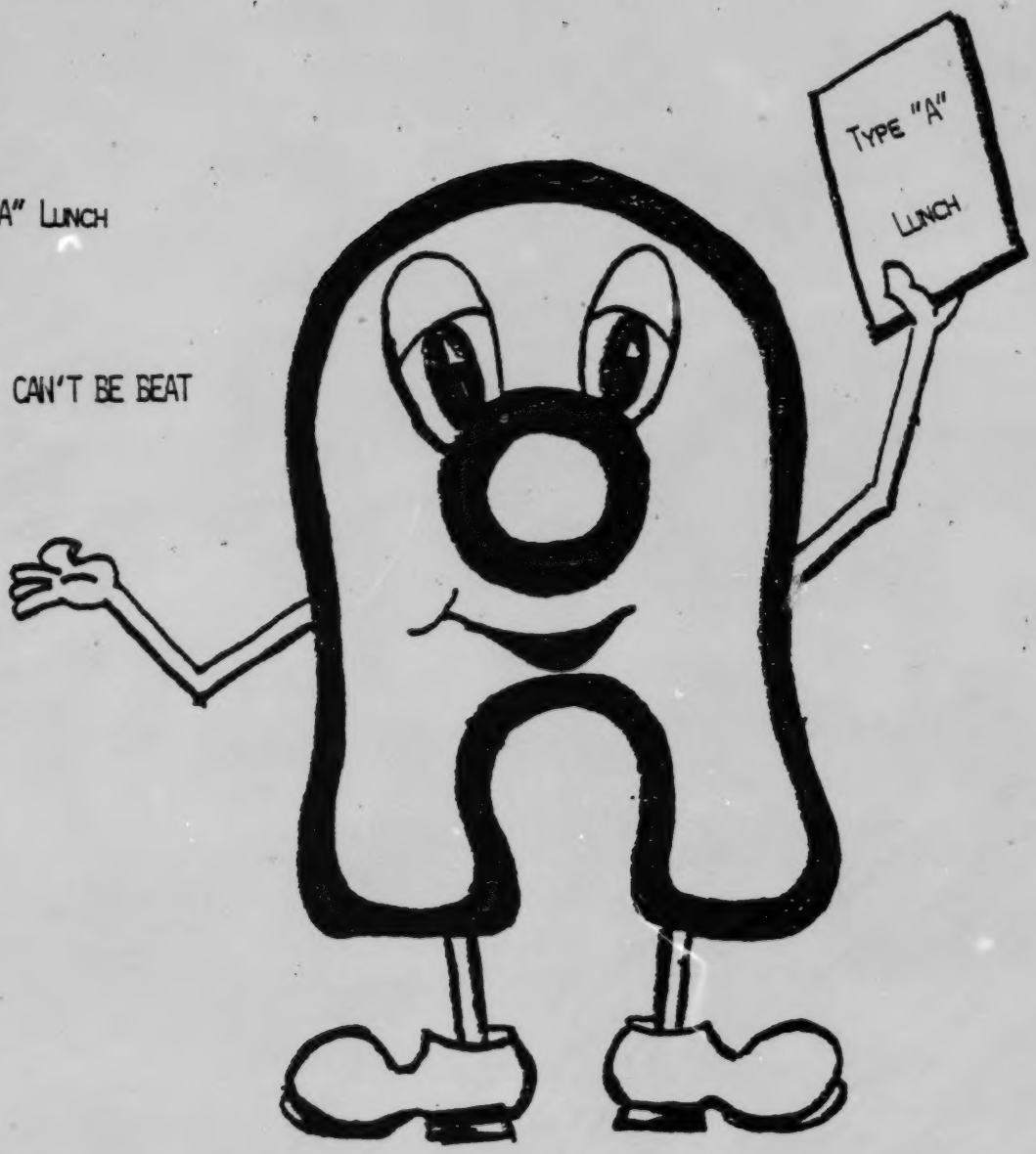
7

Lesson 7 contains the following handouts to be used with Lesson 7 of the Staff In-Service Guide.

		Page(s)
1.	"The Type "A" Lunch Poster	158
2.	Menus of Typical Type "A" Lunch	159
3.	"Type "A" Lunch Requirements"	160
4.	"Type "A" Menu Contest Forms"	161

TYPE "A" LUNCH

CAN'T BE BEAT



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Menus subject to change.

SAN MATEO CITY SCHOOL DISTRICT LUNCH MENU

*FEBRUARY*1980*

FEBRUARY KINDERGARTEN MILK
18 days=$1.80
Exact change or Check

Free and reduced meals are available to qualifying students. Kindergarten brunches also available.

				1 Energy Conservation Menu Bag Lunch DELI DELIGHT SANDWICH Carrot and Celery Sticks Fresh Apple Chocolate, Whole, or Low-Fat Milk
4 CORN DOG ON A STICK/MUSTARD French Fries Fruit Cocktail Chunky Peanut Butter Cookie Whole or Low-Fat Milk	5 BEEF & CHEESE PIZZA Mixed Green Salad/Dr. Chilled Pears Peanut Snack Whole or Low-Fat Milk	6 "Sugarless Wednesday" OVEN BAKED CHICKEN Bu. Peas Cornbread Applesauce Whole or Low-Fat Milk	7 SPAGHETTI WITH MEAT & CHEESE Bu. Green Beans Fresh Orange Whole or Low-Fat Milk	8 BEEF & BEAN BURRITO Bu. Corn Frozen Fruit Punch Cup Chocolate, Whole, or Low-Fat Milk
11 HOLIDAY	12 HOLIDAY	13 MICHI ROLL (Japanese Egg Roll) Marinated Bean Salad Fresh Orange Half Peanut Butter Cookie Chocolate, Whole, or Low-Fat Milk	14 PIZZA Fresh Green Salad Italian Dressing Peaches Milk	15 CHEESEBURGER W/CATSUP French Fried Potatoes Celery Sticks Fresh Apple Half Chocolate, Whole, or Low-Fat Milk
18 HOLIDAY	19 HOT DOG ON A BUN/ MUSTARD & CATSUP Tater Tots Frozen Orange Juice Cup Chocolate, Whole, or Low-Fat Milk	20 SPAGHETTI WITH MEAT SAUCE Bu. Green Vegetable Diced Pears Celery Sticks w/Peanut Butter Whole or Low-Fat Milk	21 BEEF TACO WITH CHEESE Shredded Lettuce Salad/Dr Fruit Cocktail Chocolate Chip Cookie Whole or Low-Fat Milk	22 CORN DOG ON A STICK W/MUSTARD Bu. Peas Bag of Raisins Chocolate, Whole, or Low-Fat Milk
25 BEEF & CHEESE ENCHILADA W/MILD SAUCE Buttered Rice Fiesta Slaw Applesauce Chocolate, Whole, or Low-Fat Milk	26 CHILI MACARONI Corn on the Cob Fresh Orange Half Oatmeal Raisin Cookie Whole or Low-Fat Milk	27 BAKED BEANS AND FRANKS Bu. Carrots ½Peanut Butter Sandwich Pineapple Chocolate, Whole, or Low-Fat Milk	28 CHEESE PIZZA Tossed Green Salad w/ Italian Dressing Fresh Apple Half Peanut Snack Whole or Low-Fat Milk	29 SLOPPY JOE ON A BUN French Fries w/Catsup Celery Sticks Peach Crisp Dessert Chocolate, Whole, or Low-Fat Milk

DEAR PARENTS, Students may purchase meals in advance on a minimum of a weekly basis. Meal tickets are validated as meals are ordered. The checks may be made payable to CAFETERIA ACCOUNT rather than the individual school. You may prefer to purchase 5, 10, 15, or 20 meals at one time. The rates are as follows:

5 Days: Grades 1-5 $3.25 Grades 6-8 $3.50
10 Days: Grades 1-5 $6.50 Grades 6-8 $7.00
15 Days: Grades 1-5 $9.75 Grades 6-8 $10.50
20 Days: Grades 1-5 $13.00 Grades 6-8 $14.00

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THE TYPE "A" LUNCH PATTERN

THE TYPE "A" LUNCH PATTERN is your guide to well-balanced lunches. It is designed to help in planning lunches that will supply the kind and amount of foods children need. To meet the requirements of the National School Lunch Program, the Type "A" lunch must contain as a minimum:

1. MILK: one-half pint of fluid whole milk as a beverage.

2. MEAT OR MEAT SUBSTITUTE:

   Lean meat, fish, or poultry (edible portion as served) - 2 ounces
   Cheese - 2 ounces
   Egg - one whole egg or its equivalent in whole dried eggs
   Dried beans or peas - ½ cup - cooked measure
   Peanut butter - 4 tablespoons or ¼ cup (or an equivalent quantity or any combination of the above foods)

   To be counted in meeting this requirement, these foods must be served in a main dish or in a main dish and one other menu item.

3. VEGETABLES AND/OR FRUIT: 3/4 CUP

   This requirement should be met by two or more servings of vegetables or fruits, or both. Fruits and vegetables in salads and desserts contribute toward this requirement. Full strength vegetable or fruit juice may be counted to meet not more than one-fourth cup of this requirement. Apples in apple cobbler, carrots in carrot cake may be counted as part.

   A fruit or vegetable rich in vitamin C should be served every day and a fruit or vegetable rich in vitamin A should be served at lease twice a week.

   Macaroni, spaghetti, noodles, rice, and hominy are cereal foods and do not meet the vegetable requirement.

4. BREAD:

   One slice of whole-grain or enriched bread; or a serving of cornbread, biscuits, rolls, miffins, etc., made of whole-grain or enriched meal or flour.

   Crackers do not meet the bread requirement; therefore, when they are served, they should be served in addition to an enriched bread. Same for rice.

5. BUTTER OR FORTIFIED MARGARINE: 1 teaspoon (one pound gives 96 servings)

   Butter may be served separately, may be spread on bread, or may be used in cooking.

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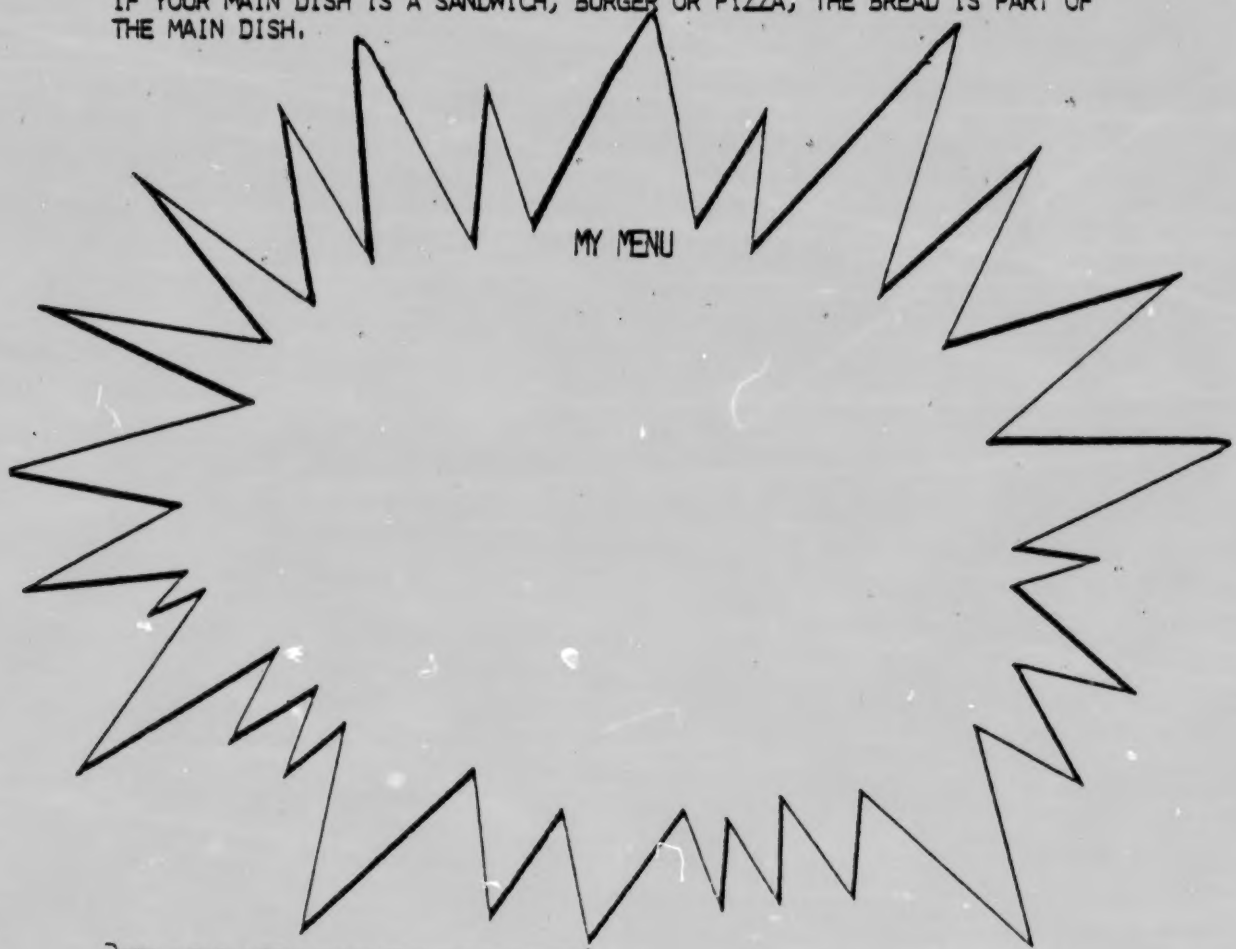
Lunch Menu Contest

Rules: Write a "Type A" lunch menu that has all these parts:

1. Main Dish (meat-protein)
2. Vegetable (raw or cooked)
3. Bread or roll
4. Fruit
5. Carton of milk

If your main dish is a sandwich, burger or pizza, the bread is part of the main dish.



Does your menu have the five parts?

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Lesson 8 contains the following handouts to be used with Lesson 8 of the Staff In-Service Guide.

		Page(s)
1.	"Meet the Food Spoilers"	163
2.	Cooking Cart Instructions	164 - 165
3.	"Zucchini Pennies"	166 - 170
4.	"Sanitation Susie"	171 - 172
5.	"Food Poisoning"	173 - 176

Meet The Food Spoilers

These are food spoilers.

Mold

Forms fuzzy patches

Yeast

Makes food smell bad

Bacteria

Makes food taste bad
Makes it soft and slimy

Like other living things, the food spoilers need food, warmth, and water to live and grow. When food is spoiled it can make you feel sick. That's why it is important to make sure that food stays clean. There are four important rules to follow to keep food safe.

Food Safety Rules

1. Always wash your hands before you touch food.
2. Always keep the kitchen and dishes clean.
3. Put food in the right place for storage.
4. Don't eat food that is spoiled.

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Cooking Cart Specifications

Height: 30" including wheels

Length: 47" without arms extended
7" with arms extended

Width: 20" (plans are for 20" but 24 would be o.k. if it is easier and if formica top comes in 24" width.

Thickness of Materials: 3/4" top, sides, bottom
1/2" shelves

Materials: Sides and shelves - plywood o.k. - want it sturdy but light weight
Top - dark butcher block or other dark colored formica to prevent stains

Electrical Supply:
a) Two outlets on upper left surface
b) Under outlets a 15' retractable 3-wire electrical cord that leaves unit from the back

Shelves: Adjustable desired at least on 1/2"

Doors: Double doors on left side
Single door on right side
Need 4" clearance between shelf

Paint: Gloss or semi-gloss enamel or varathane coating for ease of cleaning

Color: To be determined

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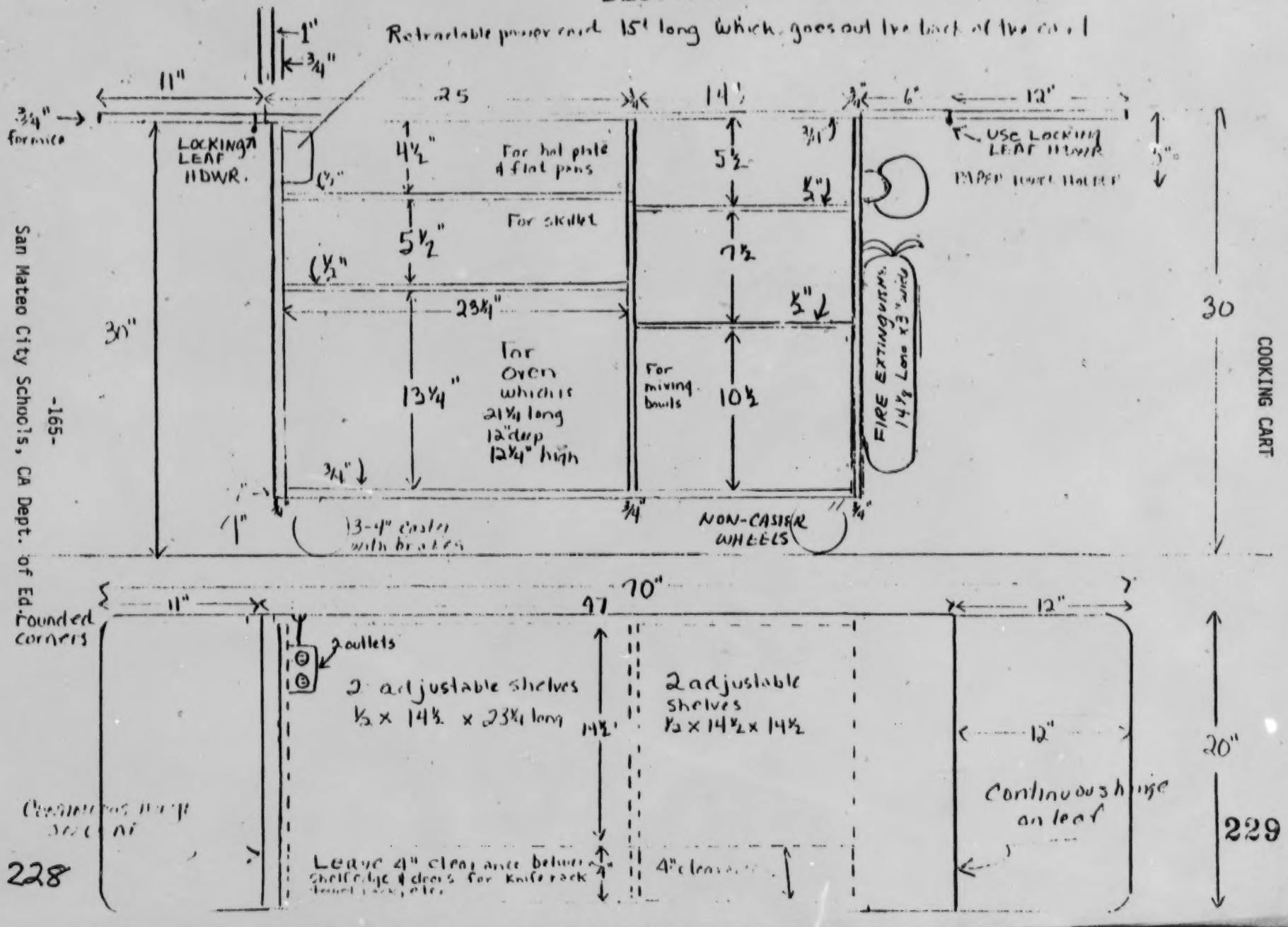
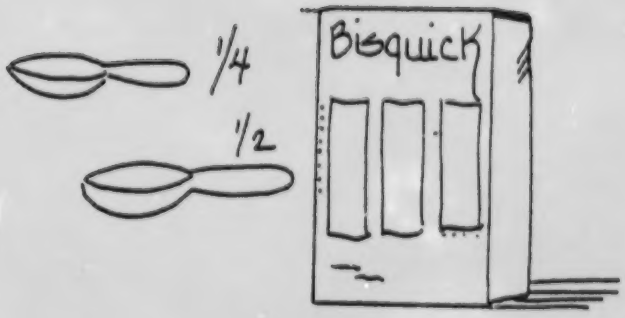


(1)

Take one cup and spoon.

(2)



Put 1/4 tsp. + 1/2 tsp. of Bisquick in cup.

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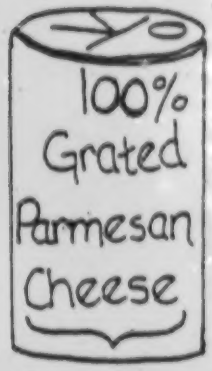
(3)



Put 1/2 tsp. of Parmesan Cheese in cup.

(4)

Add a pinch of onion to cup.

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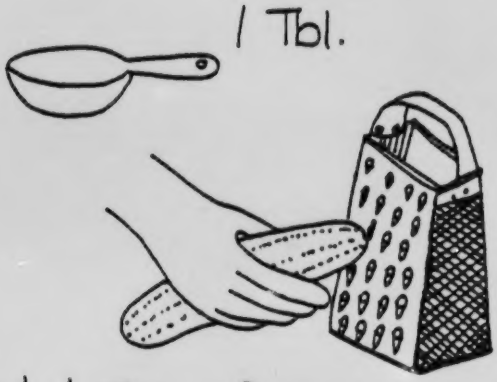
(5)



Shred 1 Tbl. of zucchini and put in cup.

(6)

Place 1/2 tsp. of beaten egg in cup.

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(7)

Mix all ingredients in your cup together.

(8)

Drop batter into skillet with small amount of oil. Cook both sides by flipping it over.

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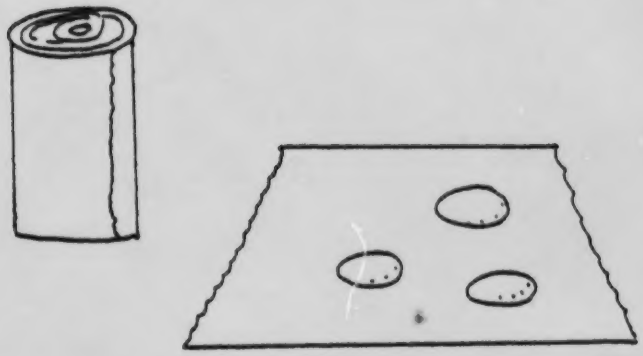
(9)



Drain on paper towel.
Then eat and enjoy!

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"SANITATION SUSIE"

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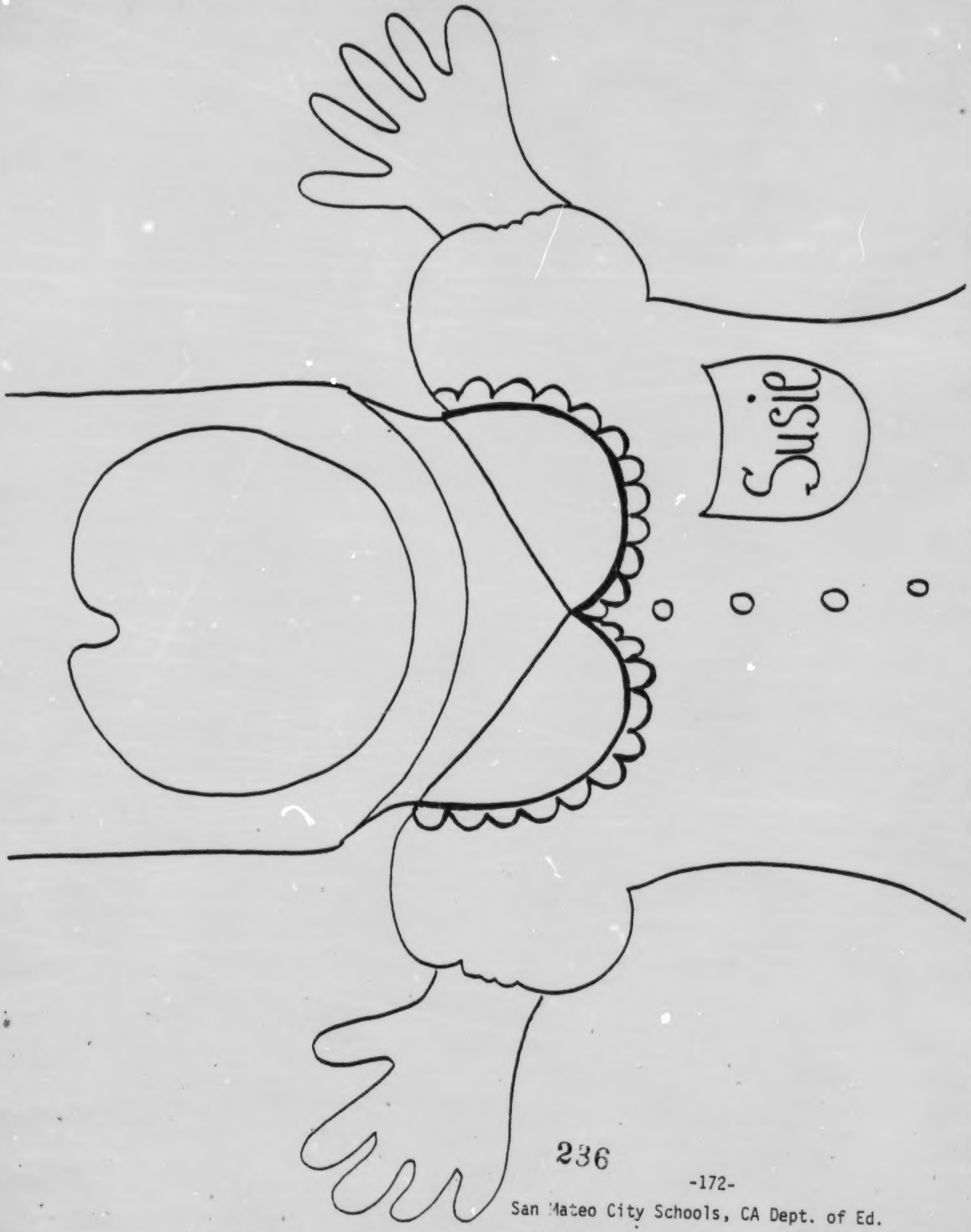

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facts about
FOOD POISONING

prepared for the joint USDA-FDA safety campaign on
SALMONELLA
CLOSTRIDIUM PERFRINGENS
STAPHYLOCOCCUS and
CLOSTRIDIUM BOTULINUM

You don't feel good. Your stomach is upset. You have abdominal pains, diarrhea, perhaps a headache.

You may think you are coming down with a cold or the flu. That's possible. But, it's also possible you have fallen victim to one of the "infamous four."

These are four common causes of food poisoning—Salmonella, Clostridium perfringens, Staphylococcus, and Clostridium botulinum. Don't be floored by the big names. They are simple, little bacteria organisms—one-celled organisms that multiply by dividing. To divide they need food, warmth, and moisture.

These bacteria may be present in all foods because they are everywhere in the environment. It's up to you to protect yourself and your family from them.

The "infamous four" can cause illness or in extreme cases even death.

Many people from the farmer through the retailer work to protect you from these bacteria. The U.S. Department of Agriculture or a state agency inspects your meat and poultry for wholesomeness. The Food and Drug Administration inspects plants where all other foods are produced.

But, from the supermarket shelf to the dinner table you are the one responsible for protecting your food. Your responsibility begins in the supermarket. Don't buy any food in containers—cans or packages—that are outdated, broken, bent, or leaky. Especially avoid bulging cans—the food could contain lethal botulism toxin. Let the store manager know there is something wrong so that he can take the package or can off the shelf.

This is a Consumer Service of
U.S. Department of Agriculture, Washington, D.C. 20250
U.S. Department of Health Education and Welfare, Public Health Service,
Food and Drug Administration, 5600 Fishers Lane, Rockville, Md. 20852

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Here are some details about the "infamous four":

Salmonella (sal' mo-nel' a) is one of the most common causes of food poisoning. While it is not often fatal, it is widespread. More than two million cases of illness from Salmonella poisoning are believed to occur in the U.S. each year.

Salmonella is most commonly found in raw meats, poultry, eggs, milk, fish, and products made from them. Other sources can be pets, such as dogs, cats, turtles, birds, and fish.

There is no way to tell by looking at, tasting, or smelling the food whether Salmonella germs are present. To avoid them, however, do not handle the food excessively and keep it below 40° F. or above 140° F.

Salmonella germs in food are destroyed by heat. So, use a meat thermometer and cook foods thoroughly. You can have your beef rare and Salmonella free.

Also, heat leftovers thoroughly. Broth and gravies should be brought to a rolling boil for several minutes when reheating.

Symptoms of Salmonella infection are fever, headache, diarrhea, abdominal discomfort, and occasionally vomiting. These appear in 24 hours after eating contaminated food. Most people recover in two to four days. Children under 4, elderly people, and people already weakened by disease could become seriously ill.

Clostridium perfringens (klos-trid' i-um per-fringe'-ins) is widely distributed in nature—in the soil, dust, on food, and in the intestinal tracts of man and other warmblooded animals. They are more widespread over the earth than any other disease-causing micro-organism.

Disease outbreaks frequently occur when foods are held in large quantities at improper temperatures for several hours or overnight. Perfringens outbreaks are closely associated with restaurant or other large feeding establishments where foods are held for long periods of time on steam tables or other warming devices.

To avoid perfringens, meats should be properly cooked, held hot (above 140° F.) and served hot. If you cook meat for later use, cool the meat rapidly in small containers in a refrigerator to 40° F. or below. Thoroughly reheat leftover meats or meat dishes before serving—and bring leftover gravy to a rolling boil before serving. Maintain cold cuts and cold sliced meats below 40° F. and serve them cold.

Large numbers of perfringens bacteria can cause diarrhea and abdominal pain in from four to 22 hours—usually in about 12 hours.

Staphylococcus (staf' y-lo-kok' us)—known as staph—is quite common. Staph organisms are in your respiratory passages and on your skin. They usually enter food from a human or an animal.

Another thing you can do in the supermarket is to make sure meat, poultry, and frozen foods are kept cold. Buy them last so they don't warm up or defrost in the cart while shopping.

Make the grocery store your last stop so you can go right home. On arriving home, immediately put your meat and poultry in the refrigerator, which should be at 40° F., or in the freezer at 0° F. Put frozen foods in the freezer right away. This prevents any bacteria in the food from growing.

When you take your fresh meat, poultry, or frozen foods out to cook, don't do any favors for the "infamous four." Thaw them in the refrigerator, or cook them frozen. If you must thaw in a hurry, do so in a water-tight plastic bag submerged in cold water.

Never thaw frozen food uncovered on a kitchen counter at room temperature. Remember, there are bacteria everywhere, and room temperature lets them grow.

The way the "infamous four" usually strike in the home is through cross-contamination. Since the bacteria are killed under proper cooking temperatures, an illness from cross-contamination can only occur if you've failed to take the right precautions. Here's how that can happen:

Your chicken has been thawed and you have cut it up on your cutting board. You put the chicken into the frying pan and began preparing your other foods. If you use the same knife and cutting board without first washing the utensils and your hands in soap and hot water, you could contaminate whatever else you prepare.

For example, say you have cooked potatoes for potato salad. You slice them with the same knife on the same cutting board you used for the raw chicken without washing either the board, the knife, or your hands. You could easily spread Salmonella bacteria to the potatoes. If you take the salad on a picnic where temperatures are warm enough for bacterial growth, they will multiply rapidly to the levels where infection can occur.

Other good habits in the kitchen can also prevent food contamination. For example, don't keep main dishes at room temperature for longer than two hours before serving. Bacteria grow rapidly at room temperature.

Follow simple hygienic practices. Use rubber gloves if you have cuts or sores on your hands. That not only keeps bacteria out of the sores, it also keeps bacteria from the sores from getting on the food.

Put leftovers into the refrigerator as soon as the meal is over. Refrigerate them in small or shallow containers so they will cool quickly.

Pets are also carriers of the "infamous four" bacteria. After handling pets, wash your hands before working with food. Don't allow pet feeding dishes, toys, or bedding in the kitchen. Don't let pets touch food, utensils, or food-working surfaces.

Staph germs grow in a wide variety of foods--all meats, poultry and egg products, egg, tuna, chicken, potato, or macaroni salads, cream filled pastries, and sandwich fillings. If staph germs are allowed to multiply to high levels, they form a toxin which you cannot boil or bake away.

Symptoms of staph food poisoning are diarrhea, vomiting, and abdominal cramps. They appear two to four hours after eating and may bother you for 24 to 48 hours. Staph food poisoning is rarely fatal.

Clostridium botulinum (klos-trid' i-um bot' u-li' num), while rare, is usually fatal. A tiny amount of the toxin poison from botulism germs can kill you. Botulism spores are found throughout the environment and are harmless. However, in the proper environment, and when not destroyed by heat, the spores divide and produce poisonous toxins. When you eat food containing the toxin, you can become ill or die. Heat makes the toxin harmless.

Only five deaths from botulism in commercially canned foods have been reported since 1925. But poisoning from home-canned foods happens more often. About 700 people have died from botulism since 1925 from eating contaminated home-canned products.

Undercooking is the real culprit in home-canning. In general, high acid foods may be canned by boiling; but all other, including meats and poultry, should be canned in pressure cookers at the appropriate heat level for the required length of time.

Signs of botulism poisoning begin 12 to 36 hours after eating the food. They include double vision, inability to swallow, speech difficulty, and progressive paralysis of the respiratory system.

Medical help must be obtained fast. If botulism is suspected, call your doctor immediately.

To guard against botulism, inspect all food containers before opening and serving--whether commercially canned or home canned. Avoid food in containers with leaky seals, and bent, broken, or bulging cans. DO NOT taste the contents! Do not even open a bulging can. It takes only a small amount of botulism toxin to be fatal.

Salmonella, perfringens, and Staphylococcus are invisible and can be detected only by a bacteriological test. Botulism may provide its own clues in canned foods. Bulging cans, an off color, unusal odor, or suspect appearance are the tipoff. If in doubt: DON'T EAT IT! DON'T EVEN TASTE IT! If it's home-canned, throw it away where no person or animal can get to it. Save any commercially canned product you may suspect and report it to the Food and Drug Administration, or your local public health officials.

The "infamous four" are everywhere, but with proper food handling practices, you can prevent them from causing illness in your home.

Issued January 1974

ECOLOGY AND NUTRITION EDUCATION

9

Lesson 9 contains the following handouts to be used with Lesson 9 of the Staff In-Service Guide.

		Page(s)
1.	"Root View Box"	178 - 179
2.	"How Plants Work"	180 - 182
3.	"Energy For Life"	183 - 187
4.	"Insects - An Introduction"	188

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Root View Box

We have always believed that the gardener blessed with a green thumb must have X-ray eyes. As he walks through the garden he seems to see into the soil. He knows how deep and wide the roots go—how much is "too much" and "too little" water. With a box designed to bring the below-ground action of plants into view the plant world takes on a new dimension.

According to teachers using the box the vegetable world comes alive in the eyes of the children. Roots and tops are seen as one. Roots develop rapidly showing a day-to-day change to sustain interest.

Manufactured root view boxes are now available—complete with built-in automatic watering and soil mix.

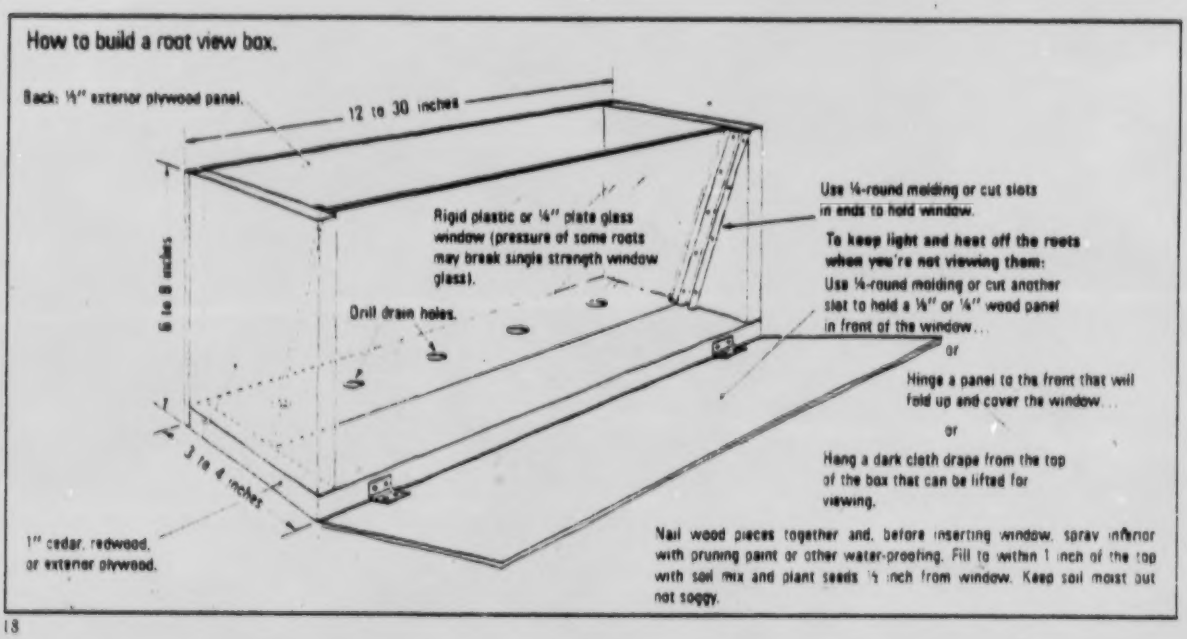
One way to make the box is diagrammed below. The dimensions are not critical. The box can be any length. We like to use a 2-foot long box. It's easy to move around but long enough to show off a dozen root vegetables. With two boxes you can compare growth in different soils or with different rates or methods of fertilizing.

To make sure of success, use one of the scientifically blended "soil" mixes: Jiffy-Mix, Peat-Lite, Redi-Earth, U.C. Mix, Super Soil, Pro-Mix, and others. Thoroughly dampen the mix before filling the box. Fill to near the top and water thoroughly to settle the soil. Sow seeds ¼ inch from the glass or plastic. Cover the box with plastic film to slow evaporation. Moisten the top of the soil when it becomes dry.

To get full exposure of root growth, the window of viewing side of the box must be slanted enough to force the roots to grow against the window. The window should be covered with a wood panel or a dark cloth drape except at viewing times since roots of many plants tend to grow away from any light source.

Very simple individual root view boxes are easy to make from 2-quart milk cartons. These small boxes allow a lot of flexibility in use. Like, for instance, comparing the growth of the same kind of plant in several kinds of soil or how several kinds of transplants react with and without starter solution.

Milk carton root view boxes
Cut the top (for a vertical box) or the side (for a horizontal box) from a half-gallon milk carton. Cut out window area leaving about ½ inch of carton between corner and window. Cut glass to fit tightly into the corners of the carton. Waterproof glue or pruning paint may be used for a tighter seal.
MILK
Glass
½" Border
Window
Soil
Window
Since roots tend to grow straight down, the window must be slanted (carton tipped) to keep roots growing against the glass and all of their action visible.


How to build a root view box.
Back: ¼" exterior plywood panel.
12 to 30 inches
6 to 8 inches
3 to 4 inches
Rigid plastic or ¼" plate glass window (pressure of some roots may break single strength window glass).
Drill drain holes.
Use ¼-round molding or cut slots in ends to hold window.
To keep light and heat off the roots when you're not viewing them:
Use ¼-round molding or cut another slot to hold a ⅛" or ¼" wood panel in front of the window...
or
Hinge a panel to the front that will fold up and cover the window...
or
Hang a dark cloth drape from the top of the box that can be lifted for viewing.
1" cedar, redwood, or exterior plywood.
Nail wood pieces together and, before inserting window, spray interior with pruning paint or other water-proofing. Fill to within 1 inch of the top with soil mix and plant seeds ½ inch from window. Keep soil moist but not soggy.

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One teacher we know is using one milk carton view box for each member of the class. They are held in a special rack for uniform tipping. The children are having a "root race."

These root view boxes can be used to show many things:

- How a carrot or radish develops.
- How pea or bean seeds sprout and grow.
- How roots develop in problem soil.
- How roots develop in ideal soil.
- How water moves through various soil types.
- How plants respond to fertilizers.

With two or more boxes you can set up a number of soil tests. For example, compare the top and root growth of lettuce plants in synthetic soil mix, in your garden soil, and in your soil mixed with compost or other organic matter. Or compare one method of fertilizing against another by fertilizing one box with a liquid fertilizer at the rate called for on the label and another box at ½ the recommended rate, but twice as often.

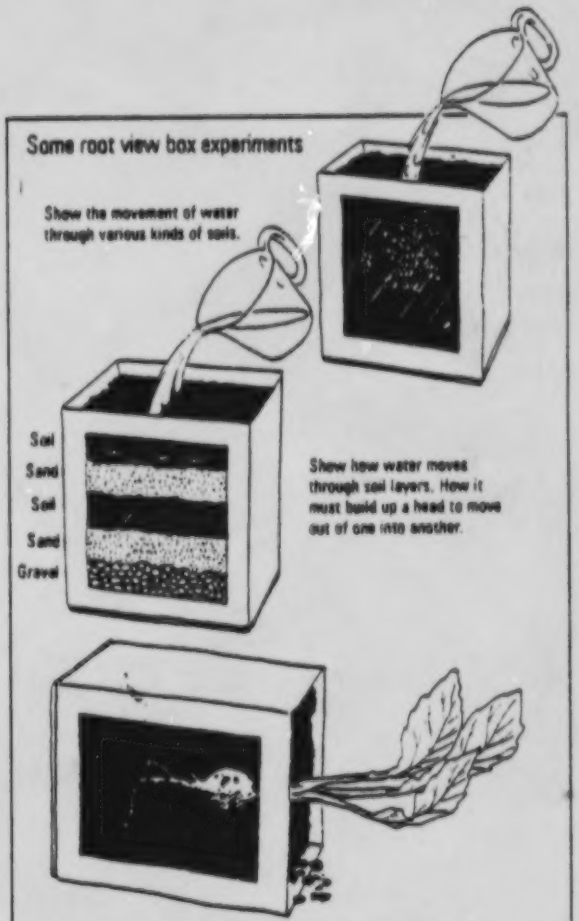
Observation of the root growth of tomato transplants will tell you a lot about planting tomatoes. Plant one as you would any other vegetable and in the same box plant another deep in the soil so the stem is buried almost up to the first leaf. Watch to see if roots form along the buried stem as well as spreading out from the root ball.

Experiments in rooting cuttings will open young eyes to another "miracle." A piece of geranium or coleus "mother" plant, stuck into the planter mix will form roots and become a duplicate of its mother. In growing cuttings, cover the box with polyethylene plastic film to prevent the cuttings from drying out. (see pages 22-25)

If the boxes are to remain indoors all the time include chives, cress, leaf lettuce, endive, and parsley in your planting. All of the root crops—carrots, beets, turnips—will need sunlight or an indoor grow-light.

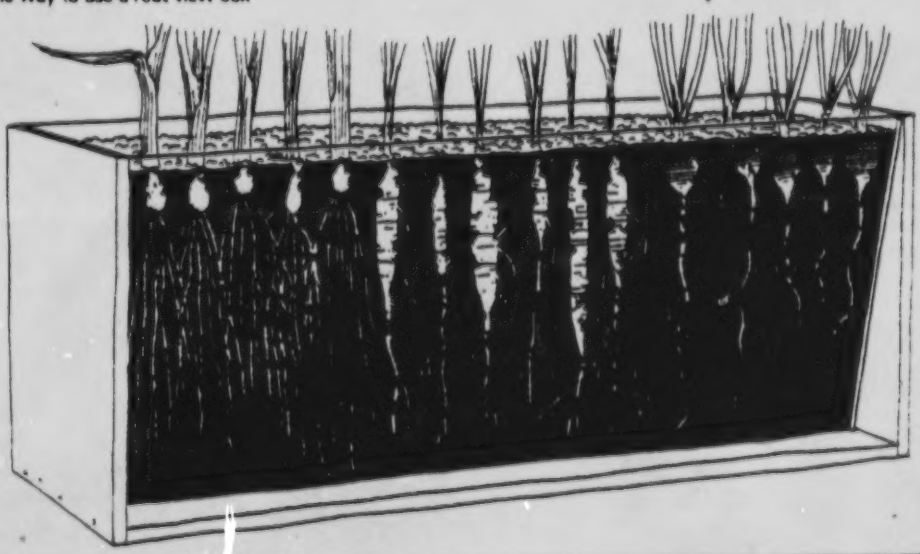
After the box has been in use for a month some light fertilization will be necessary. Use a liquid fertilizer at the rate called for on the label.

Some root view box experiments


Show the movement of water through various kinds of soils.
Soil
Sand
Soil
Sand
Gravel
Show how water moves through soil layers. How it must build up a head to move out of one into another.

See how the roots and the top of a plant change their growth when the box is laid on its side after the plant has developed in the upright position.

One way to use a root view box



Onions, carrots, and radishes, about 8 inches of each in a 24 to 30 inch box, make a striking display for an open house or science fair project.

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HOW PLANTS WORK

EACH PLANT PART HAS A SPECIAL JOB. CAN YOU DRAW A LINE TO THE CORRECT JOB EACH PART DOES?

A. ROOT	HOLDS THE LEAVES UP TO THE SUN
B. STEM	HOLDS THE PLANT IN THE GROUND
C. LEAF	PRODUCES A NEW PLANT
E. FRUIT	CATCHES THE SUN'S ENERGY
F. SEED	STORES THE SEEDS

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PLANT PHYSIOLOGY DISCUSSION

Questions: Why do we depend on plants for our food?
Why can't all animals just eat other animals?

Discussion: We depend on plants for food because only plants can capture the sun's energy. We depend on plants for "photosynthesis." Plants have special compounds, chlorophyll, that can trap particles of light (photons) and turn the sun's energy into food. Animals have no chlorophyll and can't use the sun's energy.

Once a plant has this energy it can produce complicated molecules like sugar from simple molecules like carbon dioxide and water.

$$6\ H_2O + 6\ CO_2 \longrightarrow \underset{\text{(glucose)}}{C_6H_{12}O_6} + 6\ O_2$$

Point out plants can produce other compounds too, such as starch and protein.

Once plants make these substances they store them. We usually eat the part of the plant that stores the food. For example, the beet stores the food in the beet plant. In an apple, the food is stored in the fruit.

Review of parts of a plant:

Roots:	absorb water and minerals from soil
Stem:	supports the plant
Leaves:	factories for capturing sunlight and turning it into glucose (sugar)
Flowers:	reproduce the plant

Review parts of the flower to explain where fruits come from.

Flowers have male and female parts. Male parts include the anther and the filament. These make up the stamen. The female part, the pistil, is made of the stigma, style, and ovary.

Pollen is produced at the anther and carried either by wind or insect to another flower's stigma. It travels down the style to the ovary. The pollen fertilizes the plant's eggs (ovules) inside the ovary. Seed and fruit development begins. Seeds develop from the ovules. The ovary becomes the fruit.

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SCIENCE IN THE KITCHEN

MANY OF OUR FOODS COME FROM PLANTS. SOME OF THE FOODS WE EAT FROM PLANTS ARE FRUITS, SOME ARE SEEDS, AND SOME ARE FLOWERS.

1. CAN YOU MATCH THE FOOD TO THE PART OF THE PLANT IT COMES FROM? DRAW A LINE.

ROOT	SPINACH
STEM	CARROT
LEAF	CELERY
FLOWER	APPLE
FRUIT	PEANUT
SEED	ARTICHOKE

2. EACH PART OF THE PLANT HAS A SPECIAL JOB. MATCH THE JOB TO THE CORRECT PLANT PART.

A) ROOT	HOLDS THE LEAVES UP TO THE SUN
B) STEM	HOLDS THE PLANT IN THE GROUND
C) LEAF	PRODUCES SEEDS
D) FLOWER	PRODUCES A NEW PLANT
E) FRUIT	CATCHES THE SUN'S ENERGY
F) SEED	STORES THE SEEDS

3. TO FIND OUT HOW WATER MOVES IN PLANTS PUT A PIECE OF CELERY IN A GLASS OF WATER WITH RED OR BLUE FOOD COLORING. WHAT HAPPENS TO THE COLOR OF THE LEAVES? CUT THE CELERY AND FIND THE CELERY TUBES. THEY CARRY WATER TO THE LEAVES LIKE AN ELEVATOR.

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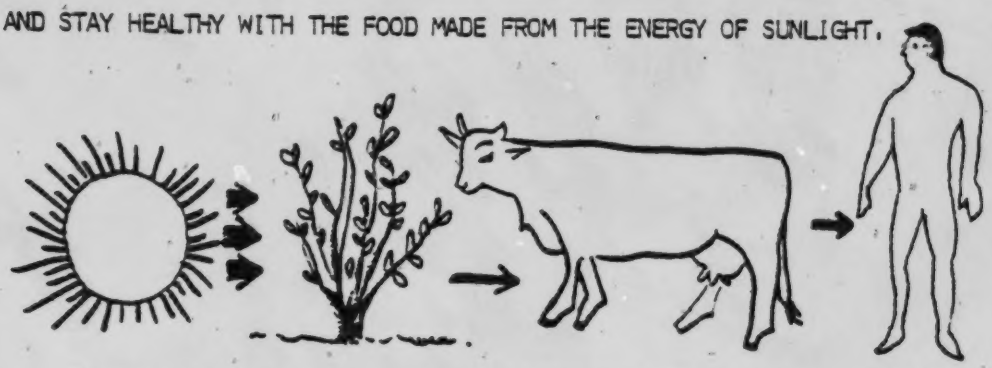
ENERGY FOR LIFE

DO YOU KNOW WHERE THE EARTH GETS MOST OF ITS ENERGY? RIGHT. FROM THE SUN. FOOD IS A FORM OF ENERGY TOO. EVERY BITE OF FOOD YOU EAT WAS MADE BY ENERGY CAPTURED FROM SUNLIGHT. YOUR BODY WILL GROW, GET ENERGY, AND STAY HEALTHY WITH THE FOOD MADE FROM THE ENERGY OF SUNLIGHT.



THE ENERGY STORED IN FOOD WAS PUT THERE BY GREEN PLANTS. THE ACTUAL MAKING OF FOOD BY THE SUN TAKES PLACE IN THE LEAVES. IN THE LEAVES ARE CELLS THAT CONTAIN A GREEN SUBSTANCE CALLED CHLOROPHYLL. WHEN CHLOROPHYLL, WATER, AND CARBON DIOXIDE COMBINE IN THE SUNLIGHT, SUGAR IS MADE. THE PROCESS OF FOOD MAKING BY A GREEN LEAF IS CALLED PHOTOSYNTHESIS. THE SUGAR THAT IS MADE HAS ANOTHER NAME—GLUCOSE. GREEN PLANTS ARE THE ONLY LIVING THINGS THAT CAN MAKE FOOD. PLANTS, OR ANIMALS THAT EAT PLANTS, PROVIDE ALL OUR FOOD.

SOME PLANTS CAN MAKE LARGE AMOUNTS OF SUGAR. SUGAR CANE AND SUGAR MAPLE TREES PRODUCE FOOD WE LIKE VERY MUCH. SUGAR CALLED GLUCOSE IS USED IN OUR BODIES AS QUICK ENERGY FOR OUR MUSCLES.

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IN SOME PLANTS MOST OF THE SUGAR IS CHANGED TO STARCH, ANOTHER FUEL FOOD. STARCH IS FOUND IN ALMOST EVERY FOOD MADE FROM PLANTS. POTATOES, CORN, AND PEAS ARE A FEW OF THE PLANTS THAT ARE RICH IN STARCH. WHEAT AND BREAD MADE FROM WHEAT IS ANOTHER GOOD SOURCE OF STARCH.

GREEN PLANTS STORE THEIR STARCH IN THEIR ROOTS, SEEDS, OR FRUITS. WE EAT THESE ROOTS, SUCH AS BEETS, SEEDS AND FRUITS TO GET THE ENERGY STORED IN THE PLANT.

PLANTS CAN CHANGE SOME OF THEIR SUGAR INTO FAT OR OIL. SOME PLANTS MAKE SO MUCH OIL THAT WE CAN PRESS IT OUT AND USE IT. OLIVES AND PEANUTS ARE MADE INTO OIL. THIS OIL OR FAT IS AN IMPORTANT ENERGY FOOD, TOO. FATS AND OILS WILL GIVE YOU ENERGY AND KEEP YOU WARM.

PROTEIN IS ANOTHER PRODUCT MADE FROM SUGAR BY PLANTS. THE PLANTS TAKE MINERALS FROM THE SOIL AND COMBINE THEM WITH SUGAR TO MAKE PROTEIN. WE EAT THE PROTEIN MADE BY PLANTS WHEN WE EAT THE PLANTS OR THE ANIMALS THAT EAT THE PLANTS.

ALL OF THE ENERGY WE GET FROM FOOD IS FROM SUGAR, STARCH, FAT, OR PROTEIN. SINCE PLANTS MAKE ALL OF THESE, WE CAN SAY WE GET ALL OF OUR ENERGY FROM PLANTS. THE PLANTS CANNOT MAKE SUGAR WITHOUT THE SUN. SO WE CAN SAY THAT ALL THE ENERGY WE GET FROM FOOD BEGINS WITH THE ENERGY FROM THE SUN.

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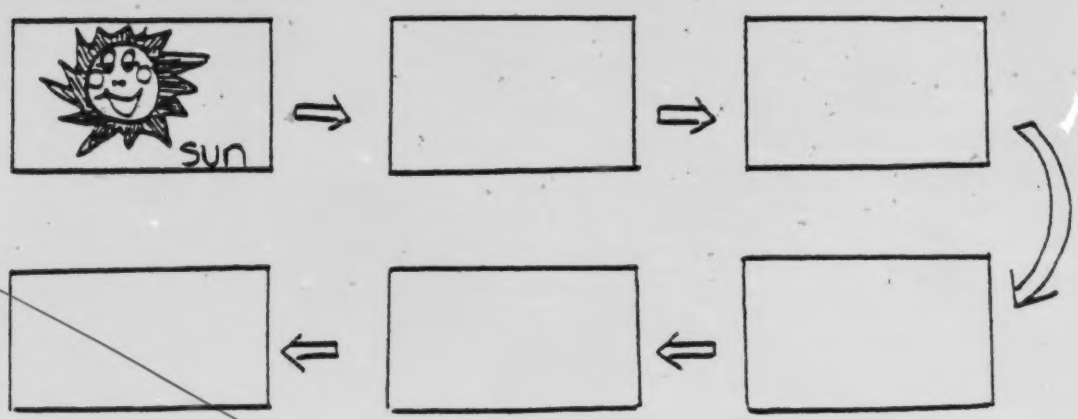
ENERGY FOR LIFE SELF TEST

READ ENERGY FOR LIFE AND FILL IN THE MISSING WORDS.

1. FOOD COMES FROM THE ENERGY OF THE _____.
2. SUGAR IS MADE IN PLANTS ONLY IN THE _____.
3. ANOTHER NAME FOR THE MAKING OF FOOD BY GREEN PLANTS IS _____.
4. SUGAR GIVES US QUICK _____.
5. IN SOME PLANTS SUGAR IS STORED IN THE FORM OF _____.
6. FATS AND OILS GIVE US _____ AND KEEP US _____.
7. PLANTS USE MINERALS FROM THE SOIL AND SUGAR TO MAKE _____.

YOU ARE A PART OF MANY FOOD CHAINS. WRITE OR DRAW A FOOD CHAIN WITH THREE OR MORE PARTS. BEGIN WITH THE SUN AND END WITH AN ANIMAL OR A PERSON.

IF YOU NEED MORE THAN THREE SPACES, FOLLOW THE ARROWS.



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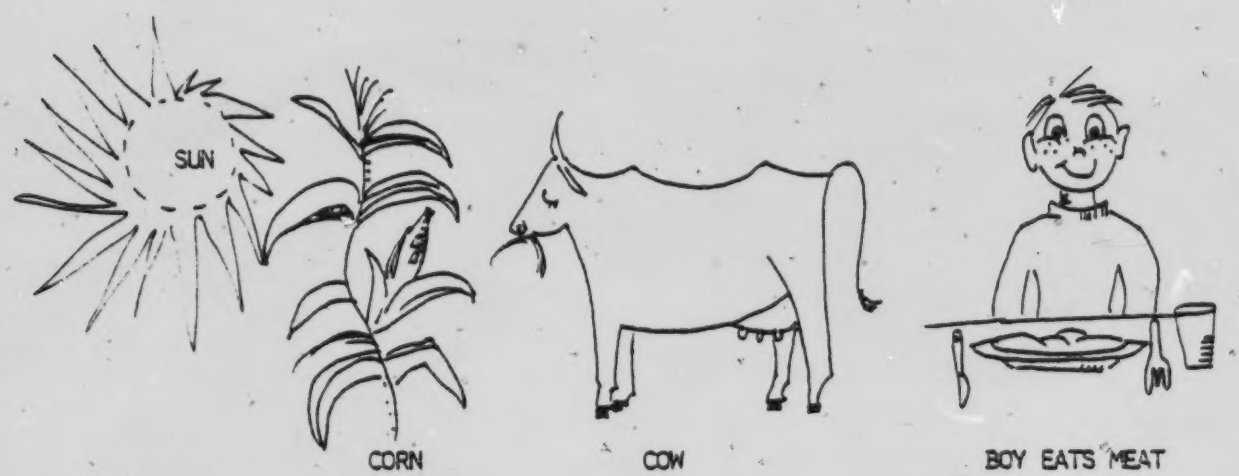
Food Chains

Where does energy come from?

All forms of energy can be traced back to the sun.



THE FOOD CHAIN

A green plant absorbs the sun's energy. The cow eats the green plant. The stored energy of the green plant becomes part of the cow in the form of meat and milk. You eat the meat and drink the milk from the cow.

Now you have the sun's energy that traveled through the corn and the cow. This use of food, starting with the sun and ending up with man, is called a food chain.

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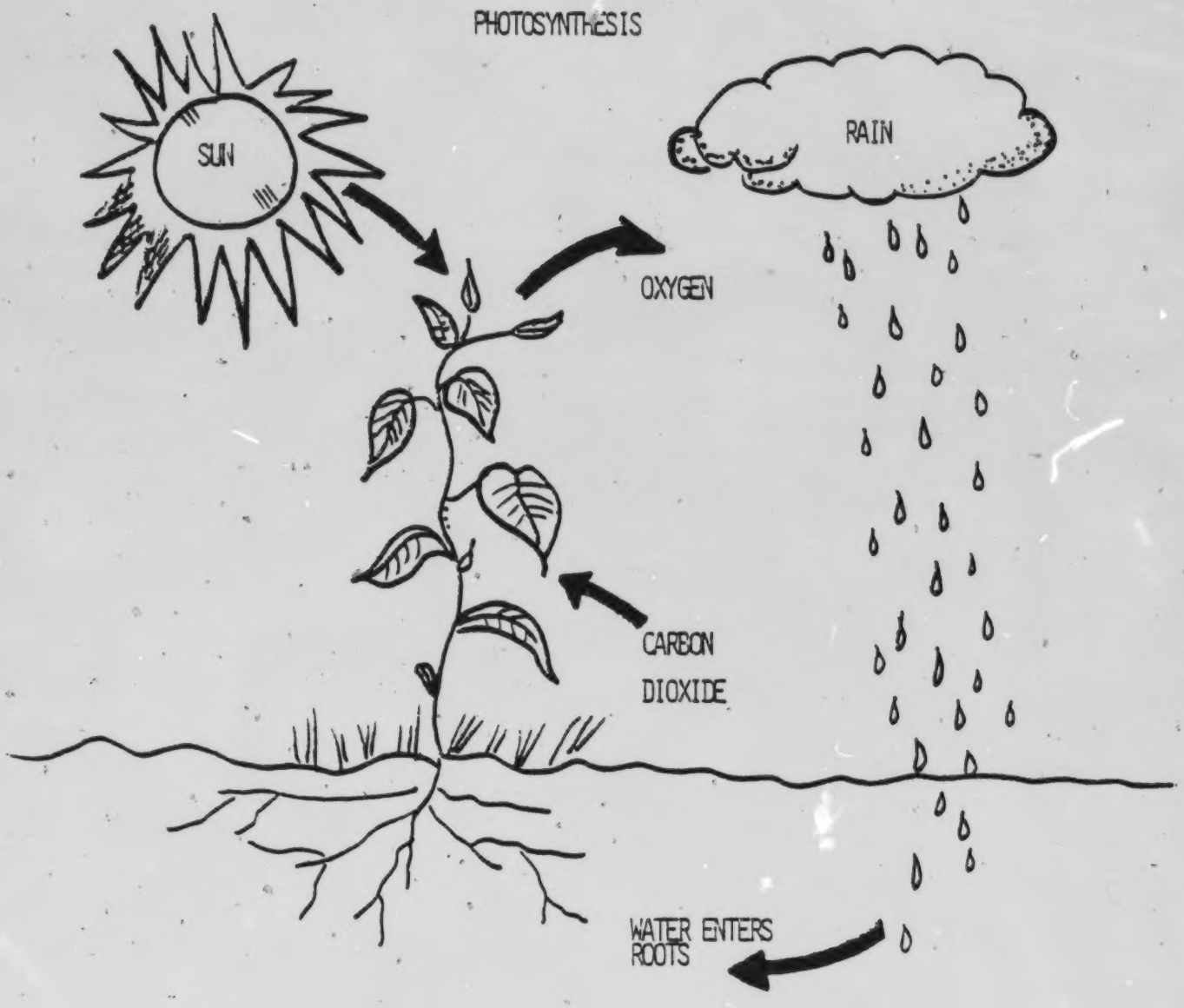

PHOTOSYNTHESIS IS THE FOOD MAKING PROCESS WHICH OCCURS IN GREEN PLANTS.

THE FOOD THE GREEN PLANT MAKES IS STORED IN THE LEAVES, STEMS, AND ROOTS.

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INSECTS. . . .AN INTRODUCTION

This is not meant to be comprehensive; there is too much to say about insects, but many fine books have been written on them, from all perspectives and at all levels of comprehension. Consult the LRS.

WHAT IS AN INSECT? It is an invertebrate animal with an ex. skeleton, 3 body parts (head, thorax and abdomen), and 6 legs. Most insects have wings. The head has the brain, multiple eyes, antennae and mouth parts. Antennae are different on different insects. Mouths may be for chewing (as on a grasshopper), sucking (as on a mosquito or butterfly), or for sponging (as on a housefly).

The legs and wings are attached to the middle part, or thorax. The abdomen has the digestive and egg-laying parts. Insects breathe oxygen through openings in the thorax and/or abdomen. Their legs may be used for hearing, smelling and tasting.

Some insects go through 4 life stages: egg, larva, pupa and adult. These are the stages of complete metamorphosis. Some insects go through only 2 or 3 stages. Some look pretty much like adults when they hatch; they just keep getting bigger, shedding old skins for new. This is gradual metamorphosis.

WHAT IS A SPIDER? Spiders are associated with insects but are not insects. They have only 2 body parts: a head/thorax combination, and an abdomen. They have 8 eyes and 8 legs, the legs being used for smelling, hearing and tasting. Baby spiders look like adults, only smaller. They shed their skins to grow. Spiders feed on insects, small animals, and other spiders. Actually spiders don't "eat" their victims. They crush a part of them and then suck out their juices. There are many ways by which they may catch their meals.

All spiders have many tiny holes, called spinnerettes, at the ends of their abdomens. These are for making silk, which is used in building their homes, webs and egg sacs. The sticky, tiny threads harden as they are exposed to air, twisting together to become "silk". A spider's feet are oily to keep him from sticking to the silk.

"CREEPY-CRAWLERS". . . There are other creatures that you may want to include in your units. Creatures such as worms and centipedes are in classes by themselves, but they are fascinating and go well with insects and spiders.

INSECT CONTROL

There are various ways to control insect pests. Some ways are totally natural: insect preditors (dragon fly, lady bugs, spiders, parasitic wasps), smelly flowers (marigolds, mums, zinnas) or other preditors (birds, etc.) Farmers are now importing thousands of aphid eaters, lady bugs and dragon flies to help crops. Chemical sprays and poisons may be used. The latter are more thorough but are often indiscriminate in killing pests, helpers and neutral insects alike, as well as threatening animals and wildlife. Natural controls are hard to get in forces strong enough to totally control pests.

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VEGETARIANISM - IT'S UP TO YOU

10

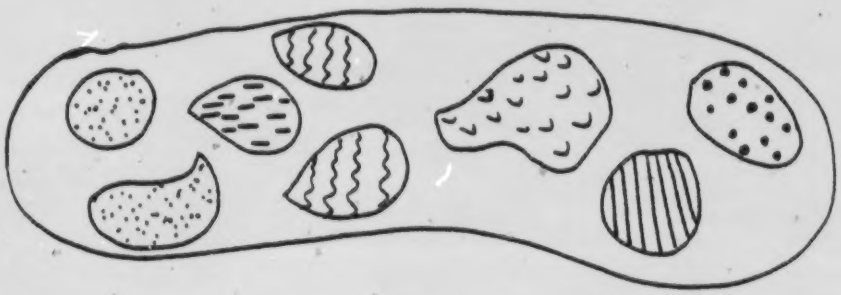
Lesson 10 contains the following handouts to be used with Lesson 10 of the Staff In-Service Guide.

		Page(s)
1.	"Proteins: Complete vs Incomplete"	190
2.	"Summary of Complementary Protein Relationships"	191
3.	"What's a Vegetarian?"	192 - 193

Proteins: Complete vs. Incomplete

Complete Protein

* found in animal sources
* contains all essential amino acids.



Incomplete Protein

* found in plant sources
* are lacking in one or more essential amino acids.

* Put the two incomplete proteins together to make a complete protein.

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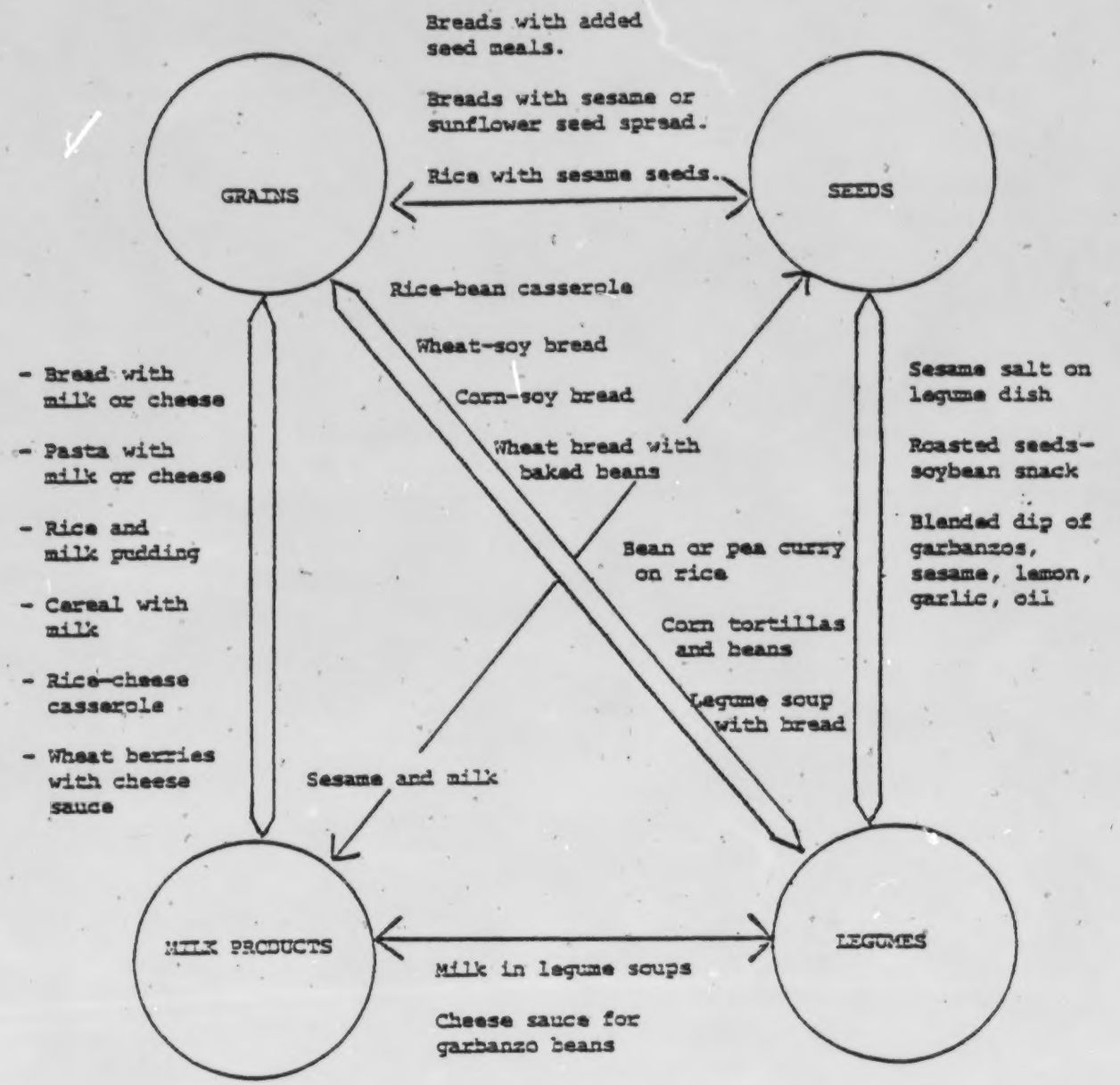
CHART II

SUMMARY OF COMPLEMENTARY PROTEIN RELATIONSHIPS


Breads with added seed meals.
Breads with sesame or sunflower seed spread.
Rice with sesame seeds.
GRAINS
SEEDS
Rice-bean casserole
Wheat-soy bread
Corn-soy bread
Wheat bread with baked beans
Bean or pea curry on rice
Corn tortillas and beans
Legume soup with bread
- Bread with milk or cheese
- Pasta with milk or cheese
- Rice and milk pudding
- Cereal with milk
- Rice-cheese casserole
- Wheat berries with cheese sauce
Sesame and milk
Sesame salt on legume dish
Roasted seeds-soybean snack
Blended dip of garbanzos, sesame, lemon, garlic, oil
MILK PRODUCTS
LEGUMES
Milk in legume soups
Cheese sauce for garbanzo beans

Means complementarily more generally confirmed between several items in each group.

Means complementary relationship demonstrated only between a few items in each group.

Courtesy of Frances Moore Lappe' from Diet For A Small Planet, Ballantine Books, New York.

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VEGETARIANISM

San Mateo City Schools, CA Dept. of Ed.

NAME _____

WHAT'S A VEGETARIAN?

DO YOU EAT MEAT, FISH, AND EGGS? DO YOU DRINK MILK? ALL OF THESE FOODS COME FROM ANIMALS.

VEGETARIANS ARE PEOPLE WHO, FOR ONE REASON OR ANOTHER, DO NOT EAT MEAT. SOME VEGETARIANS DO NOT EAT ANY FOOD THAT COMES FROM AN ANIMAL.

THE WORD "VEGETARIAN" COMES FROM THE WORD "VEGETABLE" EVEN THOUGH VEGETARIANS EAT THINGS BESIDES VEGETABLES. THEY LIKE TO EAT BREADS, GRAINS, BEANS, PEAS, NUTS, AND FRUIT PLUS CHEESE, MILK, AND EGGS.

BECAUSE VEGETARIANS DO NOT EAT MEAT, THEY HAVE TO BE CAREFUL TO EAT OTHER HIGH PROTEIN FOODS. THEY EAT CHEESE, BEANS, DRIED PEAS, SEEDS, AND NUTS FOR PROTEIN. BREADS AND CEREALS PROVIDE ENERGY. FRUITS AND VEGETABLES SUPPLY IMPORTANT VITAMINS AND MINTERALS. CALCIUM COMES FROM CHEESE AND MILK.

FILL IN THE MISSING WORDS:

1. PEOPLE WHO ARE VEGETARIANS DO NOT EAT _____.
2. TO GET PROTEIN VEGETARIANS EAT _____.
3. FOR ENERGY VEGETARIANS EAT _____.
4. FRUITS AND VEGETABLES PROVIDE _____ AND _____.
5. MILK AND CHEESE PROVIDE _____FOR STRONG TEETH AND BONES.

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WHAT'S THAT LABEL MEAN

11

Lesson 11 contains the following handouts to be used with Lesson 11 of the Staff In-Service Guide.

		Page(s)
1.	"We Want You To Know About Nutrition Labels On Food"	195 - 196
2.	"Nutrition Terms You Should Know"	197
3.	"Which Is The Better Buy?"	198

NUTRITION LABELING

Something new is being added to food labels.

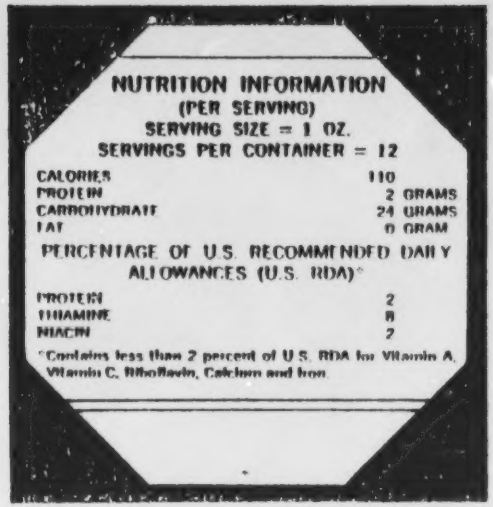
Many food processors are putting nutrition information on their food labels. By 1975, all fortified foods, and all foods for which a nutrition claim is made, must display nutrition information on the labels.

In addition to the usual information, such as name, net weight and ingredients, the new label will tell you what nutritional value is in the food. Information will be provided on the following:

Calories
Protein
Carbohydrate
Fat
Vitamin A
Vitamin C
Thiamine
Riboflavin
Niacin
Calcium
Iron

The labels at the right are examples of what you should look for in your store.

Nutrition information must appear in a standard format and, unless space does not permit, always on the part of the label immediately to the right of the main panel. Having the nutrients always listed in the same order and location makes it easier for you to compare labels.



NUTRITION INFORMATION
(PER SERVING)
SERVING SIZE = 1 OZ.
SERVINGS PER CONTAINER = 12

CALORIES	110	
PROTEIN	2	GRAMS
CARBOHYDRATE	24	GRAMS
FAT	0	GRAM

PERCENTAGE OF U.S. RECOMMENDED DAILY ALLOWANCES (U.S. RDA)*

PROTEIN	2
THIAMINE	8
NIACIN	2

*Contains less than 2 percent of U.S. RDA for Vitamin A, Vitamin C, Riboflavin, Calcium and Iron

This is the minimum information that must appear on a nutrition label.

NUTRITION INFORMATION
(PER SERVING)
SERVING SIZE = 8 OZ.
SERVINGS PER CONTAINER = 1

CALORIES	660	FAT (PERCENT OF	
PROTEIN	28 G	CALORIES 33%)	33 G
CARBOHYDRATE	43 G	POLYUNSAT	
		URATED	2 G
		SATURATED	9 G
		CHOLESTEROL*	
		(29 MG/100 G),	80 MG
		SOD UM (369 MG/	
		100 G)	830 MG

PERCENTAGE OF U.S. RECOMMENDED DAILY ALLOWANCES (U.S. RDA)

PROTEIN	38	RIBOFLAVIN	15
VITAMIN A	35	NIACIN	25
VITAMIN C		CALCIUM	2
(ASCORBIC ACID)	15	IRON	25
THIAMINE (VITAMIN B1)	15		

*Information on fat and cholesterol content is provided for polyunsaturated and saturated fat because of their relationship to heart disease.

A label may include optional listings for cholesterol, fats, and sodium.

HOW TO READ NUTRITION LABELS

Nutrition information is per serving. The label gives the size of a serving (for example, one cup, two ounces, 1 tablespoon) and tells how many servings are in the container.

Then calories are listed, followed by the amounts in grams of protein, carbohydrate and fat.

Protein is listed twice, in grams and as a percentage of the U.S. Recommended Daily Allowance.

Seven vitamins and minerals must be shown, in the same order, on all nutrition labels.

Other vitamins and minerals may also be listed.

Listing of cholesterol, fatty acid, and sodium content is optional.

A KEY TO METRIC UNITS

Nutrition labels show amounts in grams rather than ounces, because grams are a smaller unit of measurement, and many food components are present in small amounts. Here is a guide to help you read nutrition labels:

1 pound = 454 grams (g)
1 ounce = 28 grams (g)
1 gram = 1,000 milligrams (mg)
1 milligram = 1,000 micrograms (mcg)

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WHAT DOES RDA MEAN?

U.S. Recommended Daily Allowances (U.S. RDA) are the amounts of protein, vitamins and minerals that an adult should eat every day to keep healthy.

Nutrition labels list the U.S. RDA by percentage. To make sure you get enough vitamins and minerals, the percentages for each from different kinds of food should add up to about 100 each day.

U.S. Recommended Daily Allowances (U.S. RDA)

Protein	
Protein quality equal to or greater than casein	**45 grams**
Protein quality less than casein	**65 grams**
Vitamin A	**5,000 International Units**
Vitamin C (ascorbic acid)	**60 milligrams**
Thiamine (vitamin B_1)	**1.5 milligrams**
Riboflavin (vitamin B_2)	**1.7 milligrams**
Niacin	**20 milligrams**
Calcium	**1.0 gram**
Iron	**18 milligrams**
Vitamin D	400 International Units
Vitamin E	30 International Units
Vitamin B_6	2.0 milligrams
Folic acid (folacin)	0.4 milligram
Vitamin B_{12}	6 micrograms
Phosphorus	1.0 gram
Iodine	150 micrograms
Magnesium	400 milligrams
Zinc	15 milligrams
Copper	2 milligrams
Biotin	0.3 milligram
Pantothenic acid	10 milligrams

The nutrients in bold type *must* appear on nutrition labels. The other nutrients may appear.

HOW TO USE NUTRITION LABELS

You can use nutrition labels in many ways:

- To plan more nutritious meals for you and your family.
- To get more nutrition for your food dollar by comparing the nutrition values of different brands and foods.
- To select food for special diets recommended by physicians, such as for low sodium or low cholesterol.
- To count calories.
- To compare new foods with familiar ones.

FDA AND NUTRITION LABELS

Nutrition labeling is a program developed by the Food and Drug Administration. It is required for some foods and optional for others.

In response to consumer requests, nutrition labeling was developed to provide you with more information on the food you eat.

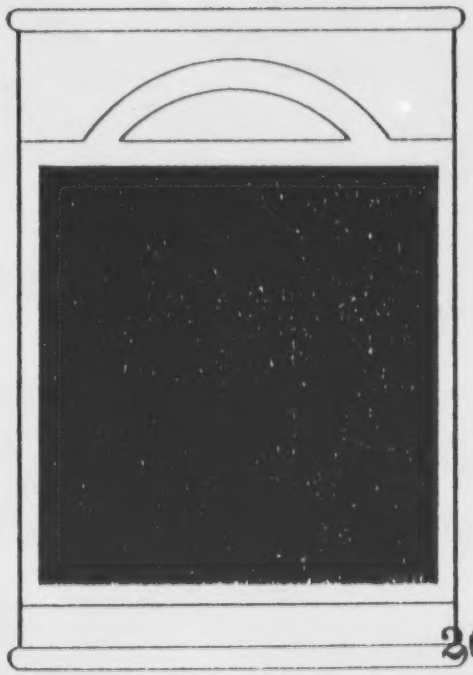
FDA

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Food and Drug Administration
5600 Fishers Lane
Rockville, Md. 20852
DHEW Publication No. (FDA) 74-2039

☆ GPO 1974 O - 557-405

For sale by the Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402 - Price 25 cents

We want you to know about nutrition labels on food



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NUTRITION TERMS YOU SHOULD KNOW

AMINO ACID: The chief structure of proteins essential in human nutrition and for maintaining nitrogen balance.

ATHEROSCLEROSIS: A condition where deposits, such as cholesterol, decrease the inside diameter of the artery and interfere with blood circulation.

BERIBERI: A form of polyneuritis marked by spasmodic rigidity in the lower limbs. Due to deficiency of vitamin B_1 (thiamine) and other vitamins.

CALORIE: A measure of the energy released when a substance is oxidized or metabolized in the body. A gram of protein or carbohydrate supplies about 4 calories; a gram of fat supplies about 9 calories.

CARBOHYDRATES: The starches, sugars, gums and celluloses from which the body derives energy by converting glucose to carbon dioxide and water.

CELL ENERGY: Energy liberated in a cell by a chemical reaction to a given stimulus. The net result of the input of food.

CHOLESTEROL: A fat-like substance found in all animal fats and oils; and in the blood, bile, brain tissue, liver, kidney and adrenal tissue. Often associated with greater incidence of coronary heart diseases.

CORONARY HEART DISEASE: Of or pertaining to diseases of the heart, especially the coronary arteries. Often caused when circulation in an artery is hindered by fat deposits or clots.

DIGESTION: The processes (generally enzymatic) by which the complex proteins, fats, and carbohydrates in foods are broken down and made absorbable.

ENZYME: Organic compounds, often proteins, which act as catalysts effecting changes in other food substances.

ESSENTIAL AMINO ACIDS: Amino acids which the human body requires but cannot synthesize. These must be supplied by food.

FAT: One of the three basic foodstuffs. Fat gives off more energy when metabolized than any other food. Fats are categorized as monounsaturated, polyunsaturated or saturated.

HYDROGENATION: A process by which a polyunsaturated oil is converted into a more saturated fat.

LINOLEIC ACID: A polyunsaturated fatty acid which the body needs but cannot synthesize.

LIPIDS: Organic compounds insoluble in water, metabolized by the body. The most common are fats and oils.

MALNUTRITION: Any of a number of nutrition disorders caused by poor nutrition. Often the result of faulty assimilation, poorly chosen diet, or overeating.

METABOLISM: The transformation by which chemical changes are made in the conversion of food.

MINERALS: Homogeneous, non-organic substances essential to a healthy diet. There are 14 essential minerals.

MYOCARDIAL INFARCTION: Death of cells in muscle tissue of the heart, resulting from obstruction of circulation, e.g., coronary thrombosis.

NUTRIENT: Nourishing substance affecting the nutritive or metabolic processes of the body.

OBESITY: Excessive accumulation of fat in the body; increase in body weight beyond the limitations of skeletal and physical requirements.

PERISTALSIS: The wave-like process by which intestinal contents are moved from one section of the colon to another.

POLYUNSATURATED FAT: A fat containing a high level of polyunsaturated fatty acids and a low level of saturated ones. The liquid salad and cooking oils are polyunsaturated and rich in linoleic acid.

PROTEIN: The body's building blocks. Vital for replacing tissues constantly lost in the process of renewal or growth.

RICKETS: A disturbance of bone formation characterized by softening of the bones, enlargement of the liver and spleen, malnutrition, sweating, and tenderness of the body. Usually the result of vitamin D deficiency in infancy and childhood.

SERUM CHOLESTEROL LEVEL: The amount of cholesterol, found by chemical analysis, in the clear portion of the blood.

VITAMINS: A group of organic substances present in minute amounts in natural foodstuffs; essential to metabolism. Lack can cause deficiency diseases.

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"Which Is The Better Buy?"

Circle the first three ingredients on each label below. These first three items indicate from what major ingredients each product is made.

What does the label tell you about each item? List two advantages and two disadvantages of each.

NUTRITION INFORMATION
PER SERVING

SERVING SIZE: 1 CUP • SERVINGS PER CONTAINER: 2

CALORIES	220	CARBOHYDRATE	53 GRAMS
PROTEIN	5 GRAMS	FAT	1 GRAM

PERCENTAGE OF U.S. RECOMMENDED DAILY ALLOWANCES (U.S. RDA)

PROTEIN	8	RIBOFLAVIN	6
VITAMIN A	6	NIACIN	10
VITAMIN C	10	CALCIUM	*
THIAMINE	2	IRON	6

*CONTAINS LESS THAN 2% OF THE U.S. RDA OF THIS NUTRIENT.

INGREDIENTS: CORN, WATER, SUGAR, SALT AND STARCH. STARCH ADDED TO INSURE SMOOTHNESS.

DIST. BY UNITED GROCERS LTD.
RICHMOND, CA 94804

0 41180 15149 6

Advantages:

Disadvantages:

NUTRITION INFORMATION
PER SERVING

SERVING SIZE: 1 CUP • SERVINGS PER CONTAINER: 2

CALORIES	50	CARBOHYDRATE	11 GRAMS
PROTEIN	2 GRAMS	FAT	0 GRAM

PERCENTAGE OF U.S. RECOMMENDED DAILY ALLOWANCES (U.S. RDA)

PROTEIN	2	NIACIN	10
VITAMIN A	30	CALCIUM	3
VITAMIN C	80	IRON	4
THIAMINE	8	PHOSPHORUS	4
RIBOFLAVIN	2	MAGNESIUM	3

INGREDIENTS: TOMATOES, WITH ADDED TOMATO JUICE, SALT, TRACE OF CALCIUM CHLORIDE, AND CITRIC ACID.

DIST. BY UNITED GROCERS LTD.
RICHMOND, CA 94804

0 41180 16086 3

Advantages:

Disadvantages:

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BEST COPY AVAILABLE

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CONSUMER SKILLS

12

Lesson 12 contains the following handouts to be used with Lesson 12 of the Staff In-Service Guide.

		Page(s)
1.	"Choosing a Reliable Resource"	200 - 205
2.	"Questions Most Frequently Asked About Sugar"	206 - 208

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CHOOSING A RELIABLE NUTRITION BOOK OR ARTICLE

CHOOSING A RELIABLE NUTRITION BOOK IS DIFFICULT BECAUSE ANYONE CAN WRITE ABOUT NUTRITION AND HEALTH.

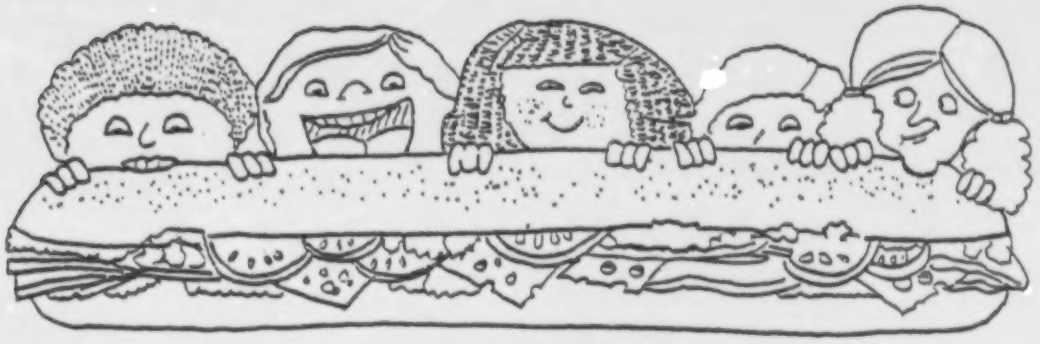
A RESOURCE IS RECOMMENDED IF....

1. The author is trained in nutrition at a recognized college or university
2. The book is on an approved list put out by a group made of college-trained dietitians/nutritionists.
3. The author uses reliable books and journals as resources.
4. The references cited are recent.

A RESOURCE IS NOT RECOMMENDED IF....

1. It tries to sell or promote a product.
2. It is full of vague medical terms and unsupported promises.
3. The claims made by the author are not reasonable or justifiable.

NOTE: To be sure a book is reliable, ask a local nutritionist or check with a university or community college.



NUTRITION

RESOURCE

HANDBOOK

WHERE TO GET ANSWERS TO NUTRITION QUESTIONS

IN SAN MATEO COUNTY

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NUTRITION INFORMATION RESOURCES

The Nutrition Project has prepared this list of available nutrition resources in the San Mateo area. As you can see, there are many places to go for nutrition information.

Choosing a Reliable Book

Choosing a reliable nutrition book is difficult because so many people write about nutrition and health-related areas. The following guidelines help in choosing a reliable book.

1. Is the author trained in nutrition at a recognized university or college?
2. Is the book on the acceptable list put out by a nutrition group made up of professionally trained dietitians?
3. Does the author acknowledge the advice of recognized nutritionists?
4. Does the author use reliable books and journals for resources?
5. Are the references cited recent?

Finally, check with a local nutritionist or with a college nutrition department.

Books and Articles Are Not Recommended If:

They try to sell or promote a product.

The article is full of vague medical terms and deceptive and unsupported promises.

The claims made by the author are not reasonable or justifiable.

RECOMMENDED MAGAZINES AND ARTICLES

These publications carry reliable nutrition articles and are enjoyable reading.

Family Health Magazine (formerly Today's Health)

Weight Watchers Magazine

"Slim Gourmet" in the San Mateo Times

Family Circle Magazine -- most articles are reliable.

Women's Day Magazine " " " "

NUTRITION BOOKS FOR THE FAMILY

Nutrition Project Lending Library*--Recommended Books

*To borrow these, Call Carvill Veech, R.D., at 347-9111, Ext. 255.

FAMILY GUIDE TO BETTER FOOD AND BETTER HEALTH, by Ronald Deutsch
Meredith Corporation, 1971, $1.95

This book explains basic nutrition principles and their application to everyday living in a readable common-sense form. Every family should have a copy. It is a classic. Available at most bookstores in paperback for $1.95 from Bantam Books.

REALITIES OF NUTRITION, by Ronald Deutsch
Bull Publishing Co., Palo Alto, 1976, $9.95 Hard cover

Something for everyone and fun to read as well as informative. Available in hard cover with easy-to-read print. A good basic nutrition book that you will enjoy.

THE DIETER'S COMPANION, by Nikki and David Goldbeck
New American Library, New York, 1975. Paperback $1.95

The Dieter's Companion dissects some of the better known weight-loss diets, pointing out their characteristics, their claimed advantages, and their nutritional pitfalls. These include Weight Watchers, Low-Carbohydrate, Crash diets, and Liquid Diets. Describes diets that don't concern weight-loss such as Natural Foods, Vegetarianism, Yoga Foods, and Macrobiotics. It includes a Table of Food Content, a review of basic nutrition, and a guide to self-evaluation of your diet. Some references are questionable, but the overall content of the book is sound.

LAUREL'S KITCHEN, A HANDBOOK OF VEGETARIAN COOKERY AND NUTRITION, by Laurel Robertson
Nilgiri Press, Berkeley, 1976, $13.95 Hard Cover

Any one interested in a meatless diet that is nutritionally sound or even just a few meatless meals will find this book a blessing. As a handbook of recipes and information it is clear, sensible, interesting, and well organized, based on up-to-date authoritative research. It is written for people with no training in nutrition or the health sciences -- people who simply want a basic reference manual of vegetarian eating for home use.

DIET FOR A SMALL PLANET: HIGH PROTEIN MEATLESS COOKERY, by Frances Moore Lappé
Ballantine Books, New York, 1975, $1.95 Paperback

This book is about protein -- how to choose meatless foods with the protein quality of meat -- and how to save $$ at the same time. A companion volume, Recipes for a Small Planet, expands on the meatless diet principle.

KIDS ARE NATURAL COOKS -- CHILD-TESTED RECIPES FOR HOME AND SCHOOL USING NATURAL FOODS,
Parents Nursery School, Inc. 1974, Paperback spiral, approximately $4.50.

This book is full of nutrition fun for school and home. Suggestions for fall, winter, spring, and summer are timely. No white sugar is used in the recipes. These recipes can be used with children as young as nursery school, but will delight older children and adults, as well.

WHERE TO FIND NUTRITION SERVICES

To insure factual answers to your questions on nutrition, contact these agencies and individuals in the San Mateo area. If the person cannot answer your questions, he or she will guide you to the best possible source.

NUTRITION EDUCATION AND CONSUMER ADVICE

San Mateo City School District	Deborah Barley Carvill Veech	415-347-9111 x 255 415-347-9111 x 237
Department of Public Health	Sally Brothers	415-573-2344
U.C. - Cooperative Extension Service	Ms. Thepus	415-881-6341
P.G. & E.	Ms. Duggan	408-298-3333 x 266
Dairy Council of California	Ms. Yeperman	415-464-0490

DIET COUNSELING

Hospital Outpatient Department Mills Hospital	Dietitian	415-579-2629
Sequoia Hospital	Dietitian	415-369-5811 x 501
Menlo Medical Clinic	Dietitian	415-323-8161

HEART DISEASE INFORMATION

Heart Association	Ms. Snyder	415-692-0981

DIABETES INFORMATION

San Mateo Diabetes Association		415-574-0371
Mills Hospital	Ann Schaiman	415-579-2619

FEDERAL NUTRITION PROGRAM (Women, Infants, Children) "WIC"

Charles Drew Medical & Dental	Ms. Hughes	415-328-5060 x 240

NUTRITION CLASSES

College of San Mateo	Nutritionist	415-574-6161
Skyline College	Nutritionist	415-355-7000
Canada College	Sally McGill	415-364-1212 x 282

U.S.FOOD AND DRUG ADMINISTRATION (FDA)

San Francisco		415-556-2062

OFFICE OF CONSUMER AFFAIRS & WEIGHTS & MEASURES 415-557-0966

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TELEMED TAPE LIBRARY

Tel-Med Tape Library is a Mills Hospital public service. Recorded health messages 3-7 minutes long are designed to help you remain healthy, help you recognize signs of illness, and learn about topics of interest to you.

The following tapes are on nutrition-related topics. To hear the tapes, call Tel-Med at 347-7711 Monday - Friday, 10 a.m. - 7 p.m.; Saturdays 10 a.m. - 4 p.m. (closed) Sundays/Holidays. Tell the operator the number of the tape you wish to hear. If you wish to hear the same tape again, or another tape, call back again and the operator will play it again.

TAPE #	TOPIC
11	Diabetes
34	Anemia
233	Diabetes in Children
303	Dental Plaque
565	Hypoglycemia
600	Cholesterol in Your Diet
601	Low Salt Diets
602	Why Are Trace Minerals Important in Your Diet?
609	Answers to Questions Often Asked About Diabetic Diets

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QUESTIONS MOST FREQUENTLY ASKED ABOUT SUGAR

1. Is there a difference between sugar refined from sugar beets and sugar refined from sugar cane?

   Answer: There is no difference in the sugar refined from either cane or beet. Sugar cane and sugar beets are plants that are able to make sugar in larger quantity than any other plants. Sugar cane, a giant grass, thrives in a warm, moist climate, storing sugar in its stalk. The sugar beet grows best in a temperate climate and stores its sugar in its silver-white root. Chemically, sugar from both sources is the same.

2. What is raw sugar?

   Answer: Raw sugar is a tan to brown, coarse granulated solid obtained on evaporation of sugar cane juice. Raw sugar is processed from the cane at a sugar mill and then shipped to a refinery. It is about 96% sucrose. Although it is sweet to the taste and pleasant smelling, it contains such contaminants as soil, fibers, molds, yeast, bacteria, lint and waxes. Moisture content is about one-half percent.

3. Is raw sugar sold to consumers?

   Answer: No. The U.S. Food and Drug Administration notes raw sugar is unfit for direct use as food or as a food ingredient because of the impurities it ordinarily contains.

4. What is turbinado sugar?

   Answer: Raw sugar may be partially refined by washing in a centrifuge under sanitary conditions. Some molasses is removed in the washing process. Mineral matter, other solid matter and invert sugar are also present in turbinado sugar crystals. In total sugar content, turbinado is closer to refined sugar than raw sugar.

5. Is turbinado sugar sold to consumers?

   Answer: Yes. Turbinado sugar can be purchased in many health stores and some supermarkets. It is used by some companies for the manufacture of food products. If turbinado sugar has been produced under proper conditions, it is edible. However, some samples have been found to contain the same contaminants present in raw sugar. When this occurs, it is in violation of U.S. Food and Drug regulations.

6. What is brown sugar?

Answer: Brown sugar consists of sugar crystals contained in a molasses syrup with natural flavor and color components.

Most sugar refiners produce brown sugar by boiling a special syrup containing the necessary flavor and color ingredients to a mass of crystals and syrup in a vacuum pan. This mass is spun in a centrifuge, but not washed, so the sugar crystals still retain some of the syrup with its brown sugar flavor and color. Some refiners make brown sugar by adding syrup to a refined white sugar in a mixer. Brown sugar produced either way is much the same.

7. How can brown sugar be stored to prevent lumps?

Answer: Brown sugar is marketed in some areas in polyethylene plastic bags which can be closed snugly to retain the sugar's natural moisture. Brown sugar purchased in cardboard cartons should be stored in a cool, moist place. If you lack an ideal storage place, empty the sugar into a rustproof container or heavy moisture-proof plastic bag and keep tightly closed.

When brown sugar dries out and hardens, empty it into a rustproof container. Place a piece of plastic wrap or foil on top of the sugar. Dampen a wad of paper towel (not dripping wet); place on the plastic wrap or foil, and cover container tightly. The sugar will absorb the moisture and become soft in 8 to 12 hours. Then remove the paper towel and keep the container tightly closed.

To soften brown sugar quickly, heat it in a 250 degree to 300 degree oven. Watch it carefully and as soon as it is soft, measure the amount you need. When the sugar cools, it will become hard again and should be softened using the wet wad of paper method described above.

8. Can brown sugar be substituted for granulated sugar in a recipe?

Answer: Yes, if the flavor of the sugar does not influence the recipe results. Pack the brown sugar when measuring or you will be using less sugar than the recipe requires.

9. What is the difference between confectioner's sugar and powdered sugar?

Answer: The two terms refer to the same product. In the East, the term confectioner's sugar is more commonly heard; whereas in the West, powdered sugar is the more common term. Years ago, in New England, the term powdered sugar was used to refer to a fine granulated sugar similar to superfine granulated sugar sold today, Much confusion resulted.

10. How can powdered (or confectioner's) sugar be stored to prevent lumps?

    Answer: Powdered sugar should be stored in airtight containers to keep the moisture out once the box has been opened. When powdered sugar absorbs dampness and then dries, lumps form. This is why about three percent cornstarch is added to prevent caking. (Brown sugar is the opposite because you want to retain the moisture.) Sift powdered sugar if lumps have formed or if the sugar has been standing in its container for a long period.

11. What is superfine or ultra-fine sugar?

    Answer: It is a very fine-grained granulated sugar. Regular granulated sugar is used for normal baking, canning and table use, while superfine granulated is ideal for extra fine textured cakes and meringues, sweetening fruits and iced drinks.

12. Are sugar cubes available in more than one size?

    Answer: Yes, there are small cubes equal to one-half teaspoon sugar and larger cubes containing approximately one teaspoon sugar per cube.

13. What nutrients are present in sugar?

    Answer: The nutrient in sugar and most other sweeteners is limited almost entirely to carbohydrate. These nutritive sweeteners are an important part of the body's total food energy supply. They also have an important role in making many foods taste more palatable. Vitamins and minerals are sometimes present in minimal amounts. That is why sweeteners are impractical as a source for adequate daily intake of necessary nutrients.

14. What is honey?

    Answer: Honey is essentially an invert sugar. It is formed by an enzyme, honey invertase, from nectar gathered by bees. Honey varies in composition and flavor, depending on the source of the nectar (clover, orange blossom, sage, etc.). A typical analysis of honey would show (exclusive of undetermined substances): 38% fructose, 31% glucose, 1% sucrose, 9% other sugars, 17% water and 0.17% ash.

15. Is honey more nutritious than granulated, powdered or brown sugar?

    Answer: A tablespoon of honey has more calories and carbohydrate content than granulated, powdered or brown sugar. It has less calcium phosphorous and iron than brown sugar. Honey contains minimal amounts of thiamin, riboflavin and ascorbic acid. These small amounts of vitamins and minerals in honey make it no more practical than sugar as a source for adequate daily intake of necessary nutritients.

WHAT ABOUT FOOD ADDITIVES

13

Lesson 13 contains the following handouts to be used with Lesson 13 of the Staff In-Service Guide.

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1.	"Primer on Food Additives"	210 -217
2.	"Five Functions of Food Additives"	218

A PRIMER ON FOOD ADDITIVES

by G. Edward Damon

Consumers today are very concerned about what's going into their food. This primer on food additives describes what they do and why modern food technology has made them necessary, and recounts how the Congress and the Federal Government have responded to consumer demands for tight controls.

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A Primer On Food Additives

"I aimed at the public's heart and by accident I hit it in the stomach."

These words were written by Upton Sinclair after spending many months with the mid-European immigrants who found work, and mistreatment, in Chicago's packing houses at the turn of the century. His book, "The Jungle," revealed that dangerous filth accompanied the production of meat and meat products and that plant owners were callous toward the welfare of their workers.

The book disgusted and angered its readers. Their loud reactions became a powerful, moving force that helped persuade Congress to pass the Pure Food and Drugs Act of 1906 as well as the Meat Inspection Act of the same year.

"Before the Civil War people raised most of what they ate and processed it themselves."

The First Food Revolution

Today's hindsight may find no excuses for legislators who were slow to act to protect consumers against impure foods, but some reasons could be advanced: Before the Civil War people raised most of what they ate and processed it themselves, and food additives were limited mostly to home-grown colorings and substances needed for preservation in storage—vegetable and fruit juices, salt, spices, smoke.

Our system of food supply changed after this war. Thousands of rural people flocked to the cities to work in factories; they now needed food grown and preserved by someone else. Manufacturers of food products sprang up almost everywhere.

Food purity as such was not a major consideration. Cheap and handy methods of preserving foods were important to profits, and scientific knowledge of food chemistry was practically nonexistent.

Dangerous adulteration of foods was commonplace. Chemicals to keep products looking good until they reached the consumer or just to hide the smell and look of spoilage were used without much restraint.

The problem of food additives was especially acute. Supplying the rapidly growing urban population required constantly expanding facilities, and speed of production took precedence over both quality and safety. For example, copper sulphate, a powerful emetic also known as blue vitriol, was added to canned vegetables to give them that fresh, green look, and salicylic acid, borax and formaldehyde were used generously—and carelessly.

Along Came Wiley

The strong leadership of one man finally made food and drug protection an operating function of the Federal Government. Dr. Harvey Washington Wiley, chief chemist for the U.S. Department of Agriculture in Washington, D.C., said publicly that the American people were being steadily poisoned by the dangerous chemicals that were being added to food with reckless abandon.

To dramatize the problem, and to learn more about the reactions of the human body to ingestion of these chemicals, he formed, in 1902, what became known as "Dr. Wiley's Poison Squad." Twelve young healthy men, recruited from the Department of Agriculture, pledged to eat nothing except what Dr. Wiley prescribed.

Dr. Wiley explained later: "I wanted young, robust fellows, with a maximum resistance to deleterious effects of adulterated foods. If they should show signs of injury after they were fed with such substances for a period of time, the deduction would naturally follow that children and older persons, more susceptible than they, would be greater sufferers from similar causes."

Over a period of five years, Poison Squad members were fed measured doses of many kinds of commonly-used food additives. Dr. Wiley was not only concerned about determining the effects of these additives, he was also interested in stirring up the public about the need for a pure food law. His dual efforts were highly successful.

President Theodore Roosevelt signed the Food and Drugs Act into

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law on June 30, 1906, and enforcement of the Act began January 1, 1907.

Factory conditions began to improve. Now that there *was* a law, complete with inspections and penalties for convicted transgressors, the food additive situation began to change, as did attitudes toward sanitation. The 1906 law defined as adulterated foods containing "any added poisonous or other added deleterious ingredient which may render such article injurious to health." Many toxic materials were kept out of the food supply by this law but it failed to work in the case of pesticide residues.

Pesticides were necessary, but there was no legal authority to determine and set safe tolerances for residues. Lead arsenate, used in those days for the coddling moth on apples, was a major problem. Efforts to enforce an informal FDA tolerance led to hundreds of seizures, but caused great opposition from the apple growers who sought help from their Congressmen.

"American consumers are protected by the most stringent food laws in the world."

Under the 1906 Act the Government had to prove in each case that the residues present would be injurious—a difficult burden. And when funds for research on the toxicity of sprays were cut off, FDA was forced to discontinue the program.

During the quarter century after 1906, great changes were taking place in food technology. Stronger controls were needed—compulsory inspections of food plants, for example.

Under the 1906 Act, inspectors could enter a plant only if allowed to do so by plant management. Penalties were too light to bring about significant changes in sanitation and labeling practices, and official standards were urgently needed to define the composition of basic food products. The deficiencies of the original Act were becoming increasingly evident.

President Franklin D. Roosevelt gave new backing in 1933 to the reforms the Food and Drug officials had been calling for. After five years of trying, the 1938 Food, Drug, and Cosmetic Act was passed. It stands today, amended many times as changing conditions have been brought to the attention of Congress.

Sufficient power to insure safe use of pesticides was one of the most pressing needs for the stronger Act of 1938. The new law prohibited the addition of poisonous or deleterious substances to food, but provided for exemptions and safe tolerances for substances that were necessary in production or unavoidable. It did not require any showing to the FDA that such substances were safe before they were introduced into the food supply.

FDA attempted to set a tolerance for a necessary pesticide, but after protracted hearings and an adverse court decision it became clear that the procedure required by the 1938 Act also was unworkable.

By this time FDA's problem with chemicals in foods had become unmanageable. Literally thousands of new compounds were being used in crop production, food processing and packaging. Some were so acutely toxic as to require emergency action by FDA. Such cases were relatively simple; it was no great problem to prove in court that they were harmful. The big problem was the host of substances which had not been sufficiently tested to show that they were safe.

The total situation so concerned FDA's Commissioner Charles W. Crawford that he decided to discuss it with the late Congressman Frank B. Keefe of Wisconsin, a strong advocate of pure foods.

On May 9, 1949, Mr. Keefe introduced a resolution calling for a special committee to investigate the use of chemicals in foods. Death ended the career of Congressman Keefe, and Representative James J. Delaney of New York was named chairman of the investigating committee. The "Delaney Hearings" became the platform for a long parade of scientific, legal, agricultural and medical experts who gave their advice on how the chemicals-in-food problem should be handled.

Early in the deliberations it became clear that "chemicals in foods" would have to be regulated in at least two separate categories—pesticides, which were used on raw agricultural commodities, and "food additives," which were substances added to improve food products or to facilitate processing or packaging.

The Pesticide Chemicals Act became law in 1954, the Food Additives Amendment was approved in 1958, and the Color Additive Amendments in 1960. In all these laws, the intention of Congress was not to ban the use of food chemicals but to insure their safety when properly used. All these laws put upon industry the responsibility to prove by scientific research acceptable to the FDA that the substances would be safe as used.

Three basic definitions will help explain the provisions of the 1958 law:

1. Food additives are components of food. They can be added directly to the food or get into the food from its surroundings, its packaging, the

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machinery used, or from any other source.

The law goes even further: If there is a possibility or "reasonable expectation" of a material becoming a food component when used in a particular manner, then it must be considered a food additive.

2. Other ingredients added to food, while considered as food additives in laymen's terms, are not *legally* classed as food additives.

Certain substances added to food, which qualified scientists generally recognized as safe under the conditions of their intended use, are not "food additives," and are exempt from the premarketing clearance requirements. This classification of "generally recognized as safe" (GRAS) may be made either on the basis of data derived from scientific procedure or, in the case of substances in use prior to January 1, 1958, on the basis of experience drawn from common and safe use in food.

Thus, the term "food additive" or the term "GRAS substance" is not limited to the artificial or synthetic chemicals that people so often associate with it. "Food additives" or "GRAS substances" include *all* raw agricultural products as well as components of fabricated foods.

It is easy to wonder how a substance, commonly known as "food," such as a potato or a carrot, for example, could also be considered a "food additive" or a "GRAS substance." If they are used as components of a food, however, they fall in one of these two classifications under the Food, Drug, and Cosmetic Act.

A good example of this might be vegetable soup. The raw agricultural products would be classed as "GRAS substances," while other possible ingredients would either have to be classified as "GRAS" or be subject to a food additive regulation.

The reasoning for the two classifications is fundamental. There is nothing about a natural product that is inherently more safe than a synthetic product. Many synthetic products are simply chemical counterparts of natural products. To say that natural products as such are safer or more desirable than synthetic products is to make a statement that is just not so.

Shortly after the enactment of the 1958 Amendment, FDA published a list of GRAS substances as part of its regulations. As of June 30, 1972, approximately 560 substances for direct use in food for humans, 108 substances for use in food packaging, and 46 compounds for adding trace minerals to animal foods were listed as GRAS.

3. The Delaney Clause is also a part of the 1958 Amendments. Sponsored by Congressman Delaney (D-NY), the clause requires that no food additive can be approved if the additive is found to induce cancer when ingested by man or animal.

This clause is binding on Government agencies and food manufacturers alike, regardless of the *amount* of the additive planned to be consumed over the lifetime of either man or animal. The enactment of this clause was an expression by the Congress about the degree of risk to cancer to which the public could be exposed; as far as the Congress was concerned, *no* degree of risk was acceptable.

How Are Food Additives Approved?

The requirements for approving food additives are not as complicated as they sound.

Any substance newly proposed for addition to food must undergo strict testing. Information must be presented to FDA showing the identity of the new additive, its chemical composition, how it is manufactured, and the methods to be used to detect and measure its presence in the food supply at the levels of expected use. Data must establish that the proposed testing methods are of sufficient sensitivity to determine compliance with the regulations.

There must also be data establishing that the additive will accomplish the intended physical or technical effect in the food, and that the amount proposed is no higher than that reasonably necessary to accomplish this effect.

Finally, data must be provided establishing that the additive is safe for its intended use. This requires scientific evidence ordinarily obtained from feeding studies and other tests using the proposed additive at various levels in the diets of two or more species of animals.

In vegetable soup, "the raw agricultural products would be classed as 'GRAS substances'."

Can You Really Test for Safety?

In a very real sense, you cannot test for safety; you can only test for the presence of known hazards. If the hazards are not found, the additive

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"A typical testing sequence involves at least two animal species and often more."

is assumed to be safe. If someone discovers a new hazard, the testing must be done again.

This pattern has been repeated many times in FDA's history as scientific knowledge increases. Of course, a new food additive cannot be legally used unless, in addition to being safe, it will accomplish some intended effect in the production, manufacture, or storage of the food.

How Safe Is Safe?

Testing food additives to determine their degree of hazard, or safety, obviously cannot be done with humans as the primary testing agents. The young men who made up Dr. Wiley's Poison Squad would today be required to sample additives numbering in the thousands, and today's standards of measurement accuracy, plus our modern concepts of human safety, would make the earlier approach unacceptable; we no longer allow human subjects to be used for such tests.

A typical testing sequence involves at least two animal species and often more. FDA realizes that no animal reacts exactly like man and that a multiple-species testing program, often running through two generations or more, is far more productive of dependable results than is the testing of one species alone for a brief time.

Even this careful testing is not considered enough. FDA uses a measuring stick which might be called the philosophy of the minimum. These are the essential factors:

- A tolerance or limitation will not exceed the smallest amount needed, even though a higher tolerance may be safe.
- After determining the maximum amount that will not produce any undesirable effect on the test animals used, 1/100th of that amount is normally the maximum allowed for use by man. Of course, man might react differently from the test animals; when we know something from human experience or human studies, it is possible that a smaller safety factor than 1/100th can be used. On the other hand, if it is proved that even a smaller amount than 1/100th will do the job, that smaller amount will be used instead.
- It is quite human to think of desired safety—in anything—in the realm of 100 percent only. Such "perfection" is literally impossible. It helps here to realize that the risks are minute and the benefits, more often than not, are highly desirable and in many cases essential for the maintenance of an adequate, nutritious and safe food supply.

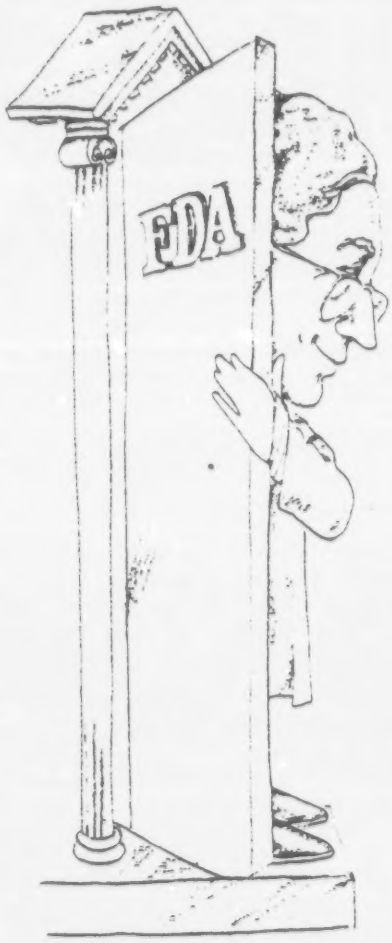
Just How Much Is Allowed?

A logical compromise between normal concern and test results seems to lie with the question, "How Much?" After all, we need salt in our diet, but we could die from eating too much salt.

FDA allows food additives to be used only if there is a practical certainty that no harm will result from their normal, allowed use over a lifetime.

The permitted amounts of additives vary depending on the kind of food, the safety limits of the additive, and the least amount needed to accomplish the desired result. FDA laboratories can measure these in amounts so small that they are commonly expressed in parts per million, and sometimes parts per trillion.

"Information must be presented to FDA showing . . . that the additive will accomplish the intended effect in the food, and that the amount proposed is no higher than that reasonably necessary to accomplish this effect."



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To relate these minute amounts to something more easily understood, let's take two commonly used additives. BHA and BHT are frequently listed on labels of baked goods, cereals, and other foods using oils and fats in their manufacture. Their complete names are butylated hydroxyanisole and butylated hydroxytoluene, which not only take up a lot of space on a small food label, but might frighten anyone who is not a chemist.

BHA and BHT are preservatives and antioxidants—without them, many foods would turn rancid in a short time. In the average American diet both BHA and BHT are consumed in amounts slightly less than 4 ppm—four parts per million.

This proportion may be easier to grasp if you consider:

- 4 ppm equals one-eighth of one ounce for each ton of food.
- A large needle in a 1-ton haystack could be 4 ppm by weight.
- 4 ppm in all the food a person might eat in a normal lifetime would equal about four mouthfuls.
- Parts per trillion? This is more difficult to describe. If you filled an olympic-size swimming pool with iced tea and dropped *one grain* of sugar into the pool—and stirred the mixture thoroughly—you might have one part per trillion. And an FDA scientist could determine just how much sweetening you used.

Can We Get Along Without Additives?

We can get along without food additives, but not as well. Were it not for food additives, we would have to go back to the old concept of bakery freshness—good today, stale tomorrow.

Many of us remember when the cottage cheese separated, cookies dried up in two days, any food with fat or oil in it became rancid, canned vegetables and fruits were soft and mushy, and marshmallows got too hard to toast. Without additives the variety and quality of foods would return to those familiar to grandmother.

The quantities available would definitely be less, and convenience foods would be nonexistent. FDA believes that its work assures the safe use of food additives.

Those "Poisonouschemicals"

Some people have expressed their feelings by coining a term that doesn't actually exist, "poisonouschemicals." If all chemicals are poisonous, then people should stop eating, because all foods are chemicals. Some familiar additives are pure chemicals, such as the potassium iodide in table salt and many familiar vitamins—all essential to man's health.

Expressing foods in chemical terms can be a lengthy job. For example, milk is made of water, 12 fats, 6 proteins, lactose (milk sugar), 9 salts, 7 acids, 3 pigments, 7 enzymes, 18 vitamins, 6 nitrogenous compounds and 3 gases—and the chemical names of these would take another page, at least. Milk is a formidable chemical, but hardly poisonous to most Americans.

Where Do Food Additives Come From?

Many allowable food additives are derived directly from food itself. For example, lecithin is found in all living organisms, both plant and animal. It is obtained primarily from soybeans and is used mostly as an emulsifier to keep ingredients in a processed food from separating.

A large number of laboratory-created additives are also found naturally in foods. Calcium and sodium propionate, for example, are produced during fermentation in the production of Swiss cheese. The propionates are mold inhibitors, used primarily in baked goods. The vitamins used to improve the nutritive value of many foods are identical to the vitamins found naturally in food.

Actually, all additives are chemicals, regardless of their source, and the body does not distinguish between them.

The cost of an additive usually adds "next to nothing" to the final cost of a food. For example, enough calcium propionate to help protect 1,000 loaves of bread from becoming moldy costs less than ten cents.

Incidentally

In addition to the intentional additives you have been reading about, there are also *incidental* additives, which have no planned function in food, but become a part of it during some phase of processing, packaging or storing.

Good examples are substances that might migrate from a packaging material to the food. The safety of incidental additives is scientifically controlled by FDA to the same high degree as are the intentional additives.

The Many Uses

A food additive must be of some

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benefit to a food or its production. Some additives are regulated with a specific group in mind—children, say, or diabetics.

Nutrient supplements are the vitamins and minerals added to foods to improve nutritive value and sometimes to replace those that are lost during processing, as in enriched bread. Vitamins A and D are added to margarine and vitamin D to milk. Potassium iodide is added to salt to furnish the iodine necessary to prevent simple goiter.

Nonnutritive sweeteners are the sugar substitutes.

Preservatives. There are many kinds, some effective for a particular type of food or against a particular spoilage organism. They are called antioxidants, inhibitors, fungicides, and sequestrants.

Emulsifiers improve the uniformity, fineness of grain, smoothness and body of such foods as bakery goods, ice cream and confectionery products.

Stabilizers and thickeners give that desired smoothness of texture and uniformity of color and flavor to confectioneries, ice creams and other frozen desserts, chocolate milk and artificially sweetened beverages. Commonly used are pectins, vegetable gums and gelatins.

Flavors and flavoring agents represent our largest group of food additives. We are familiar with many, including the spices and liquid derivatives of onion, garlic, cloves and peppermint.

Some agents enhance flavor, such as monosodium glutamate, made from corn. Our natural flavor sources, however, have not been enough to satisfy our flavor demands for at least the past 80 years. To meet the demands, industry has developed synthetic flavorings which not only resemble accurately natural flavor but have the advantage of stability.

Many artificial flavors cannot be told from the natural ones, and many added flavors are derived from natural sources, such as amyl acetate—banana flavor extracted from bananas, and methyl salicylate —oil of wintergreen from the leaves of the wintergreen plant.

From FDA's standpoint, "protection of the American consumer has always been dominant."

Bleaching agents and maturing agents speed up the aging process which improves the breadmaking quality of flour. Freshly milled flour is yellowish in color and makes very poor bread.

Colors are considered highly important although they do not improve eating qualities. We are so used to a certain color in a specific food that we would refuse to buy and eat it if some other color was present, or the expected color was too pale to look "healthy."

Additives have many other uses, including hardening, drying, leavening, anti-foaming, firming, crisping, anti-sticking, whipping, creaming, clarifying, and sterilizing.

Without these many aids to food processing, today's grocery stores would need a lot less room to sell what foods would be left.

The Job Is Never Done

Food additives are a part of today's modern food technology. The first impetus for Federal control involved Dr. Wiley and his Poison Squad. The second strong push came during and after World War II, when hundreds of new chemicals were suddenly tried and then used to protect and enhance food, particularly for military purposes. Some of these were subsequently taken off the market when there was time for adequate testing with newer machines and techniques for detection and measurement.

Today, there are thousands of tested and approved food additives. Many are approved only for certain products and in exact amounts. New techniques and improved machinery keep pace with new additives which, if approved by FDA, will further improve our food supply.

Food technology came first; then came Federal regulation. The path from the original USDA's Bureau of Chemistry to FDA's Bureau of Foods has been long and full of technical, legal and scientific changes. Its general direction, however, has never varied: protection of the American consumer has always been dominant.

G. Edward Damon is a writer in FDA's Bureau of Foods

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....Five Functions Of Additives.....

1. Nutritional Value
2. Quality or Acceptability
3. Keeping Quality
4. Availability
5. Preparation Ease

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COOKING THE METRIC WAY

14

Lesson 14 contains the following handouts to be used with Lesson 14 of the Staff In-Service Guide.

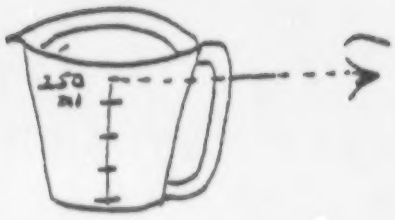
	Page(s)
1. "The Metric System"	220
2. "Snack Metric"	221 - 222

METRIC MEASUREMENTS

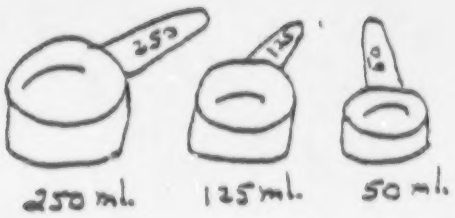
Oven Temperatures
(rounded)

Degrees Fahrenheit	Degrees Celcius
250 - 275	120-- 135
300 - 325	150 - 165
350 - 375	175 - 190
400 - 425	205 - 220
450 - 475	230 - 245
500 - 550	260 - 290

Measuring Cups



For liquids



For dry ingredients

Measuring Spoons

If metric measuring spoons are not available

label 1 teaspoon " 5 ml"

label 1 tablespoon "15 ml"

Metric measuring equipment is available from Enrich, 760 Kifer Rd., Sunnyvale, CA 94086

(1)

Place 5mL of raisins in plastic bag.

(2)

Place 5mL of peanuts in plastic bag.

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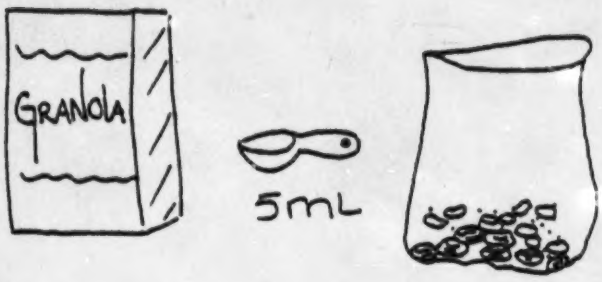
③



Place 5mL of Granola in plastic bag.

④

Shake to mix. Then eat!!